

DOMESTIC INFLUX
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RICE UNIVERSITY SCHOOL OF ARCHITECTURE

RICE UNIVERSITY

Domestic InFlux

by

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THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE

Master of Architecture

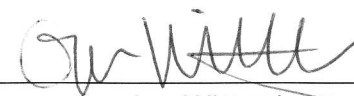
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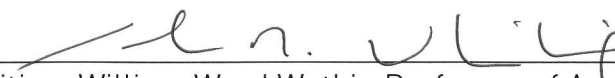
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Houston, Texas
May 2013

Domestic InFlux

This thesis is concerned with the application of agency in relation to personal possession. Through an investigation of the intersection of existing typologies and contemporary technologies, “Domestic Influx” endeavors to establish a platform for the creation of a novel model for private housing, supporting program, which works in conjunction with individual users to accommodate and facilitate changing needs with maximum efficiency.

Through the collapse and expansion of certain programmatic elements, “Domestic InFlux” utilizes an overlapping of typologies that allows occupants to exert augmented control over the square footage in their domain.

Today’s house is larger and the average family is smaller than in the past. There is a current trend towards increased segmentation inside homes, isolating program to areas that have been predefined by inflexible architecture. In the last 30 years, programmatic organization has been largely influenced by developments in technology. Climate control technologies have allowed user to combat their environment rather than utilize and take advantage of it. As technology develops and the world becomes more efficient, so should the house.

Ambivalence and contradiction is the condition of today’s world. We want to live in the city, but we also want to live in a mansion. We want more “stuff,” but we don’t want to look at it. What we truly “want,” is an architecture that recognizes “special occasions” for what they are; routine occurrences which systematically break

the requirements of everyday existence through special conditions, such as increased occupancy, ornamentation, or unique programmatic requirements and provides for them even if that space remains unoccupied for most of the year. With “Domestic InFlux” a mansion can be fit into a row house, turning it in to a veritable “Swiss Army” house – a house for every need.

The “Domestic InFlux” house is no longer passive. It is interactive and dynamic, influencing the way we perceive space and its opportunities at every scale--including the scale of the neighborhood.

The ability for communities and cities to adapt to their residents is a central benefit of the Domestic InFlux project. Along with the ability to adapt to needs in private residences, the Domestic InFlux house, when implemented in aggregation, facilitates the production of flexible communal, multi-user interstitial space that encourage dynamic community growth, connectivity, and social exchange.

ACKNOWLEDGEMENTS

Thank you

To my Thesis Advisor, Grant Alford, for helping me find and pull all the right threads that lead to a thesis of which I can be proud.

To Chimaobi Izeogu, Tucker Douglas, Nicole Meyer, William Trotty, Serge Zotov, Michelle Goldberg, Quinn Lammie, Jacob Tannenbaum, and Chloe Brunner for your hard work and for sharing your valuable skills with me.


To Thesis Director Scott Colman for challenging, guiding, and inspiring me to get the most out of this experience.

To Madre and Padre for keeping me fueled and encouraged throughout the process.

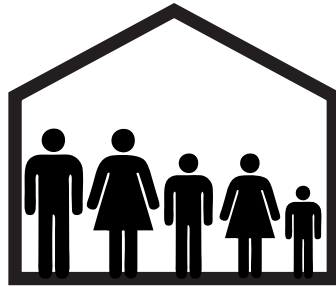
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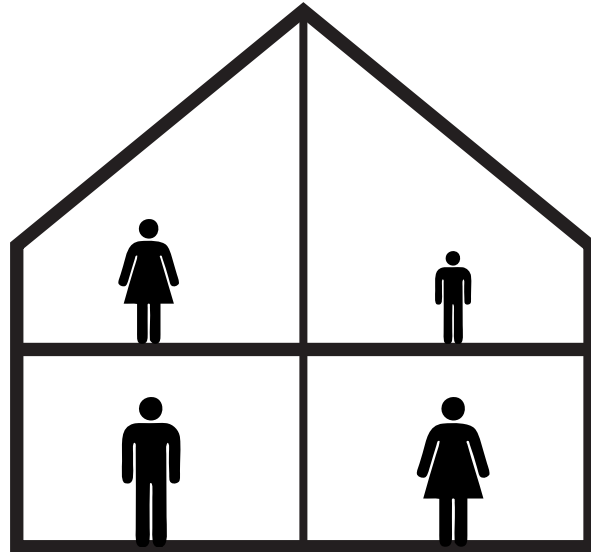
CONTEXT

An architectural rendering of a modern courtyard. The space is defined by high, grey concrete walls and a flat concrete ceiling. The ground is a mix of green grass and light-colored stone paving. In the foreground, a man in a patterned suit and a woman in a black dress and high heels walk towards the left. In the center, a man in a dark jacket and a young girl in a blue jacket walk together. To the right, a young girl in a pink top and patterned skirt walks towards the viewer, holding a colorful woven basket. In the background, a man in a dark jacket and a young girl in a blue jacket walk together. A small tree with yellow leaves stands in the center. The building has large glass windows and doors, and a wooden staircase is visible in the background. The overall atmosphere is bright and modern.

Domestic InFlux collects all of our disparate domestic ideals into a singular space that can be reshaped and redefined at any time with ease. My interest in efficiency and flexibility expanded in scale from the individual object to the neighborhood as I progressed through this experiment in domesticity. As these houses are grouped into neighborhoods, they collaborate to create aggregate outdoor rooms that are shared by residents. These aggregate rooms can vary in scale and therefore vary in accessibility to the greater public, but always serve to create a catalyst for social interactions outside the house.



1970 Average
1,400 sq. ft.
fixed space/variable program



2010 Average
2,700 sq. ft.
fixed spaces/fixed program

Today's world is changing. The average family is getting smaller and the average house is getting larger. The way we live in it needs to change as well.



The classic American dream is to live in the suburbs with a white picket fence and have your own piece of land, but the growing American desire is to move into a more urban context.



Needs



Desires

As a society we have other conflicting desires. We want more stuff, but we don't want to look at it. What we need is architecture that works for us and adapts to our changing needs. Architecture should present only the stuff we want at any given time.



We want enough space for guests on special occasions, but most of the time those spaces sit unoccupied. We don't need those rooms to exist all year round.



InFlux House
2,000 sq. ft.
variable space/variable program

Domestic InFlux demonstrates how to fit a mansion into a row house by imagining a “Swiss Army house” that transforms for every need. Today’s home does not need more spaces - it needs spaces that do more. Through multiple vertical and horizontal configurations, Domestic InFlux can store or collapse space within the house, allowing other program to expand as needed.



There are numerous existing and historical housing typologies, each with a unique manner in which it influences the daily life and activities of its occupants. The personal and inter-personal connections that make up “daily life,” established through the intersection of programmatic possibilities and the agency of users, is what I identify in my thesis as “domesticity.”

An aerial photograph of Houston, Texas, with two specific areas highlighted in a vibrant blue color. The top-right area, labeled 'FIFTH WARD', is a large, irregularly shaped urban district. The bottom-left area, labeled 'DOWNTOWN', is a more compact, circular urban district. The rest of the city's grid and surrounding areas are shown in grayscale. The word 'SITE' is positioned in the top-left corner.

SITE

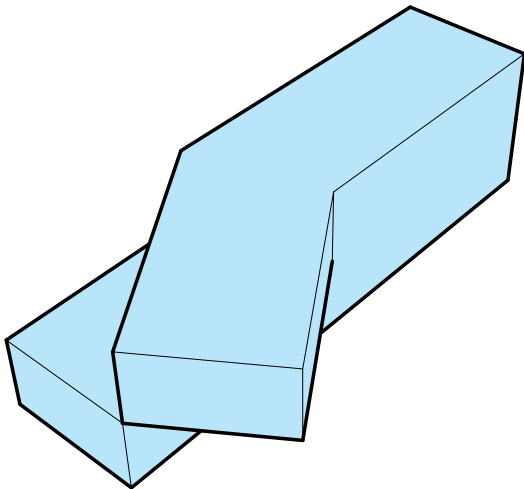
FIFTH WARD

DOWNTOWN

The ideal location for this project is in a space that is neither urban nor suburban, but lays somewhere in between. In Houston, an example would be the Fifth Ward. Situated one minute from downtown, it gives residents easy access to the city's center, but is distanced enough to allow for a more suburban style arrangement of privately owned houses as opposed to apartment or condo style living.

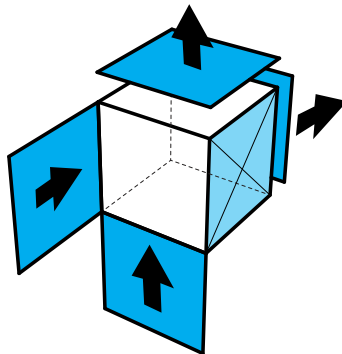
META-STRUCTURE

Protoform

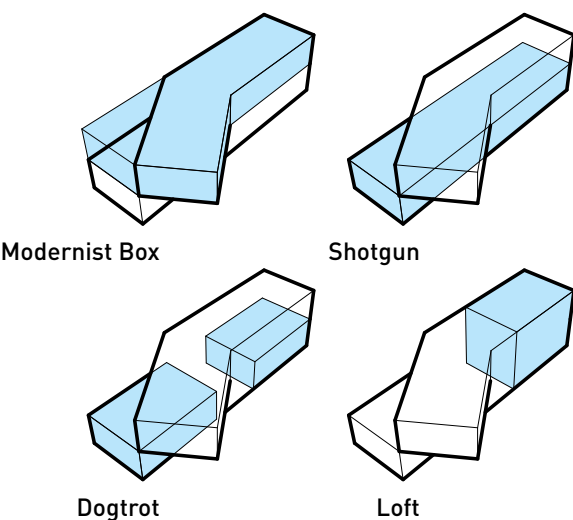


STEP 1

Typeform Technology

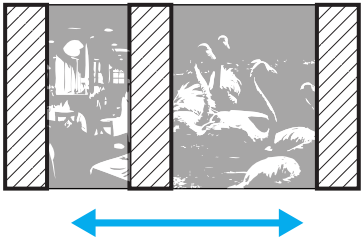


Unpacked Typeforms

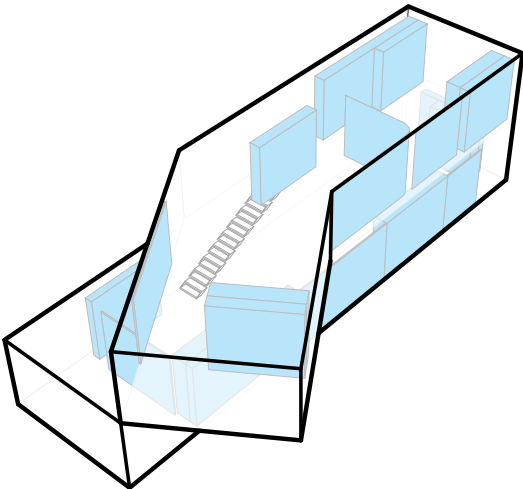


STEP 2

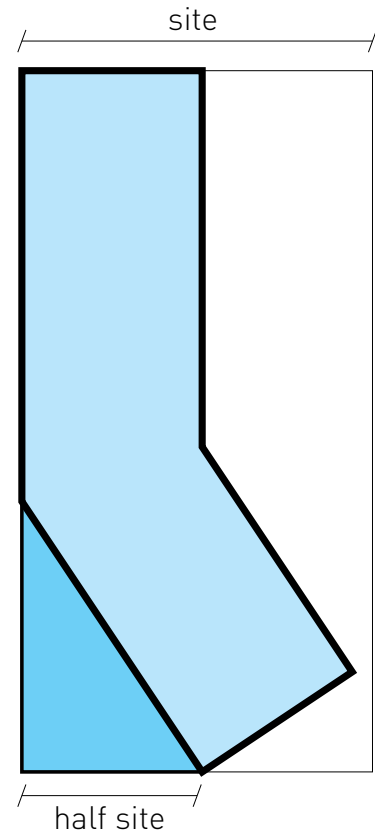
Defining Program



House

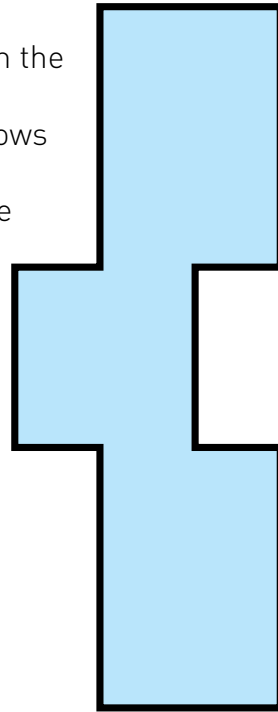


STEP 3



Torque

A simple twist on the classic shotgun typology that allows for expanded occupation of the outdoors.



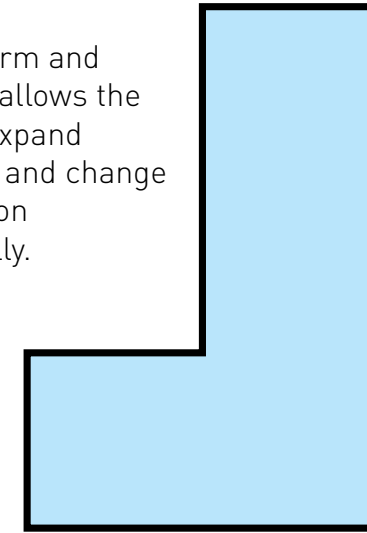
Broken Shotgun

The combination of typologies allows this protoform to change its effect drastically.



Loft

Loft in form and function allows the user to expand program and change its location sectionally.

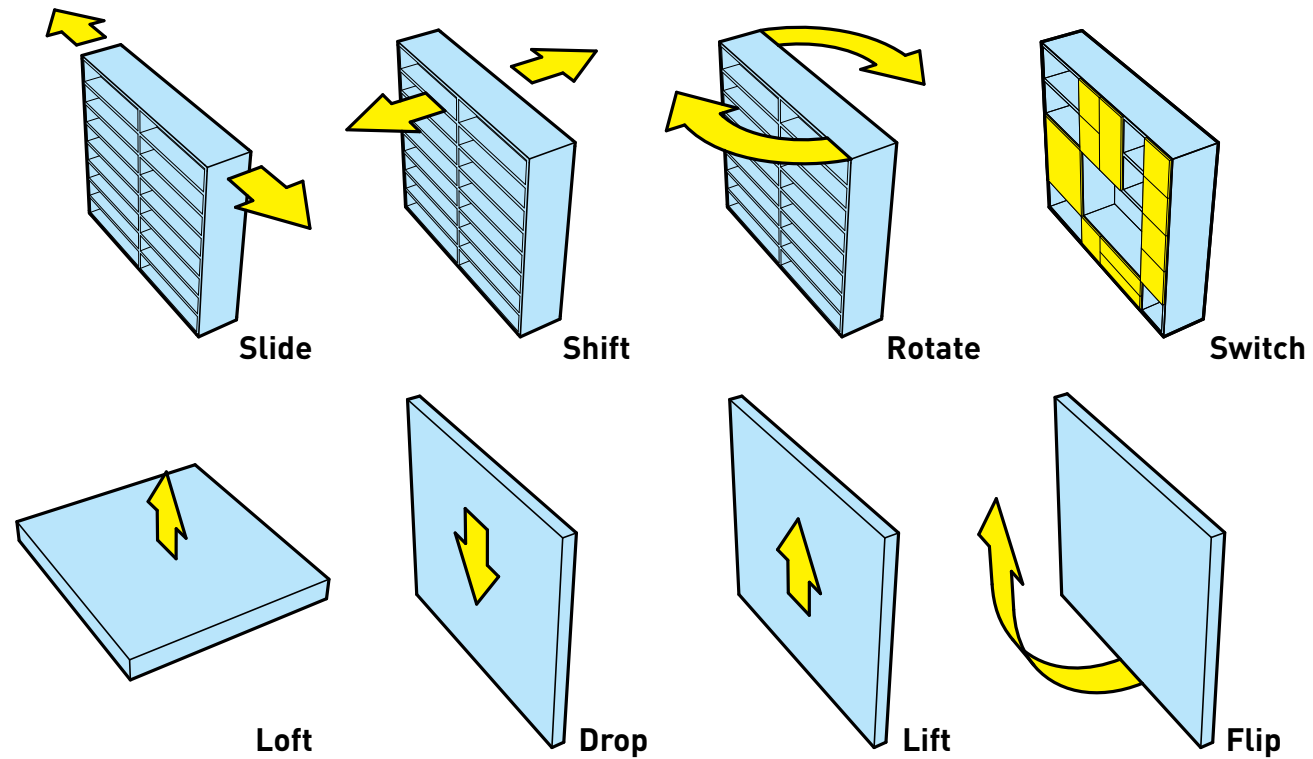


Cantilever

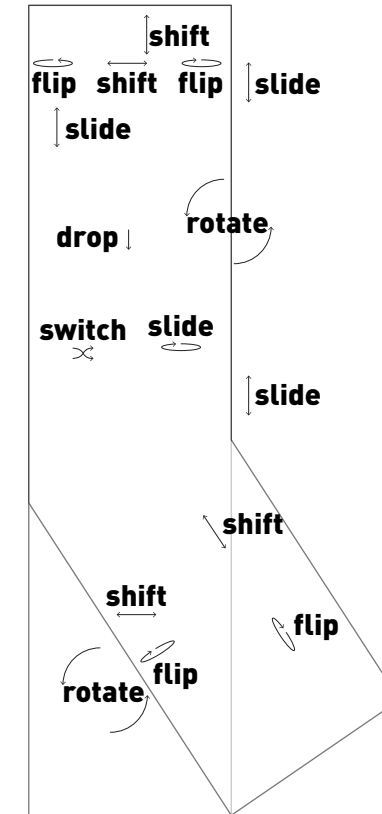
Lifting the major interior space to allow for space below is not a new idea, but making that space flexible increases its potential.

The first stage in developing the Domestic InFlux house as a design strategy is the creation of **Protoforms**. Each Protoform uses a module of one half of the width of the site, with each site being 35'x70'. Using half of the width of the site enables programmatic expansion to the exterior while increasing light infiltration to the interior. Through various organizational trials, I have created four Protoforms that all accomplish the same goal in different ways.

Protoforms

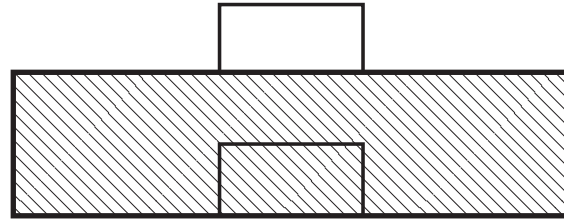
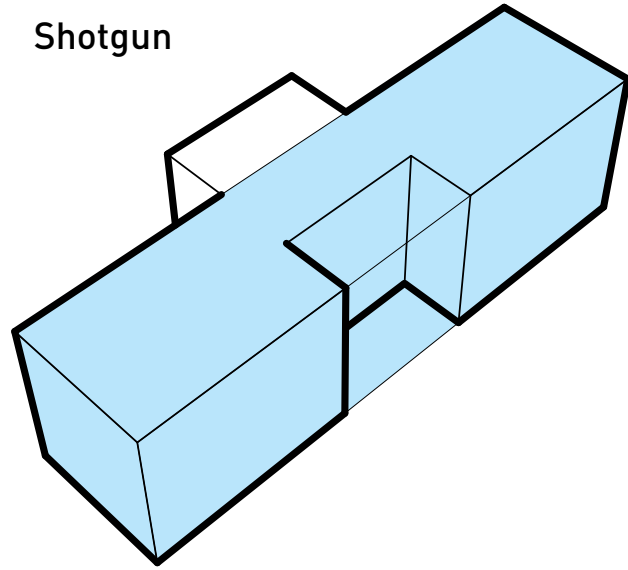


Typeform Technology

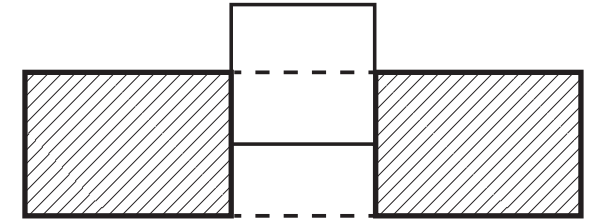
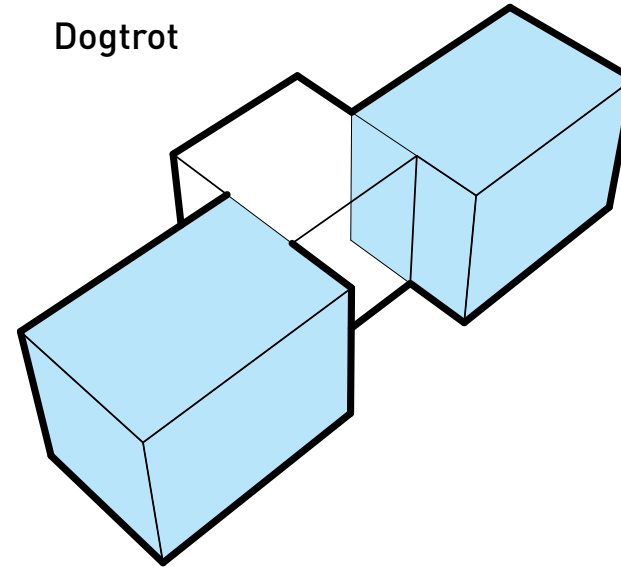


Using **Typeform Technologies** – the concept of addressing typologies as “tools” within an activated and functional system – a Domestic InFlux house can flip between different types of living by rearranging the basic framework of the home.

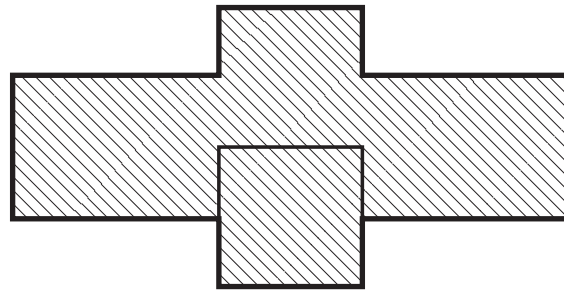
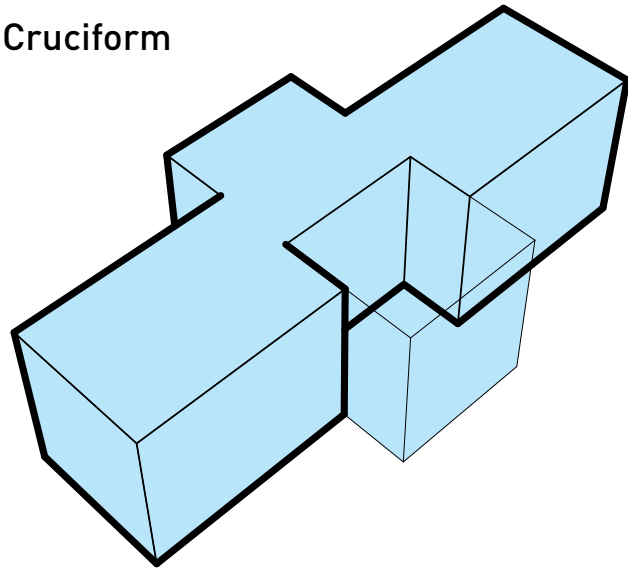
Shotgun



Dogtrot

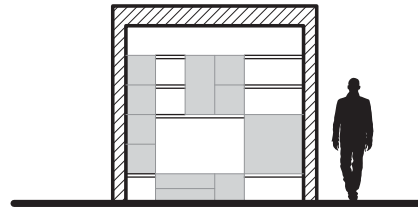


Cruciform

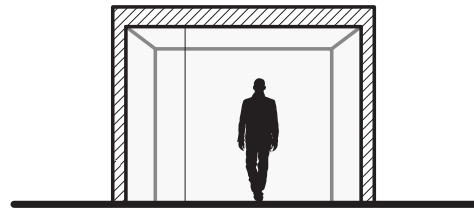
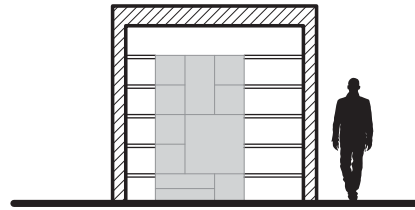


Unpacked Typeforms

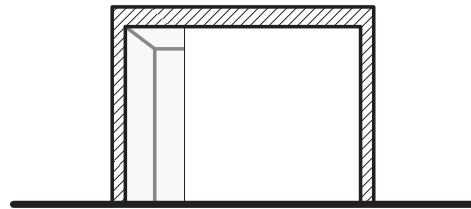
Each arrangement of the Typeform Technologies creates a new **Unpacked Typeform**. These are the different forms that are created within each house. Each one has its own effect on one's relationship with his or her house.



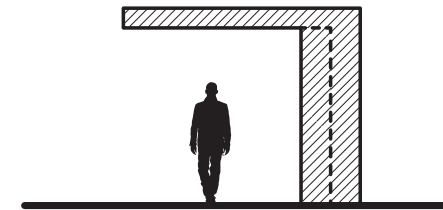
Programmatic Switch
Present storage to define program



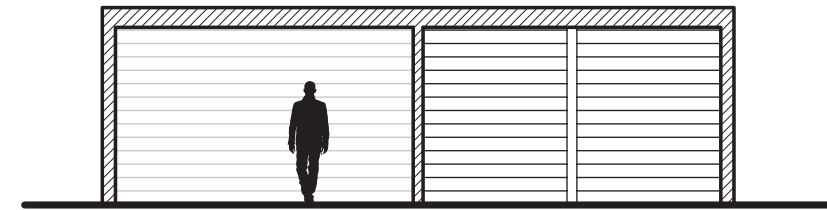
Scrim
Combination of light and material creates barrier, projections surface, or programmatic canvas



Defined Program



Defining Core
Perpendicular sliding core that defines edges of space

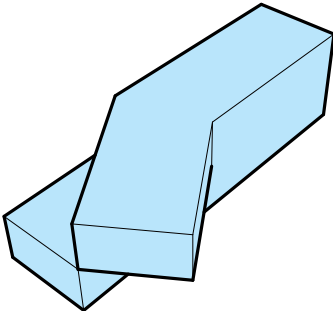


Essentializing Core
Parallel sliding core defines program of predefined space

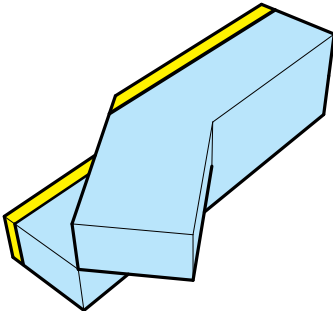
The last step is **Defining Program**. This tells us how we should act in the space and what the function of the space is. It can be as simple as presenting objects into the space.

TORQUE

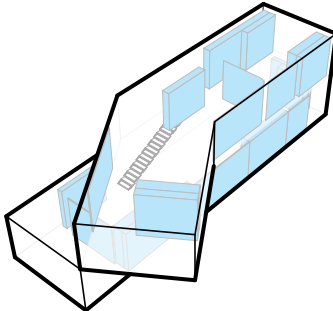
- 2,340 sq.ft.
- | | | |
|-----------------|----------------|-----------------|
| 3 bedroom | Dining Room | Office |
| Master Bathroom | Play Room | Porch |
| Half Bathroom | Theater | Roof Terrace |
| Kitchen | Breakfast Room | Covered Parking |
| Library | Craft Room | Yard |
| Art Studio | Living Room | |



PROTOFORM



STATIC CORE



HOUSE



Reveal the living room - complete with couch, chair, love seat, and entertainment system - by collapsing the bedroom.

Expand living space for larger groups in the case of a party or large gathering.

Multiply the functions of this space by revealing the program for a living room, office, craft room, or even a bedroom.

Twist this wall to blend indoor and outdoor spaces and expand interior program.

Claim exterior space using a simple cantilever.

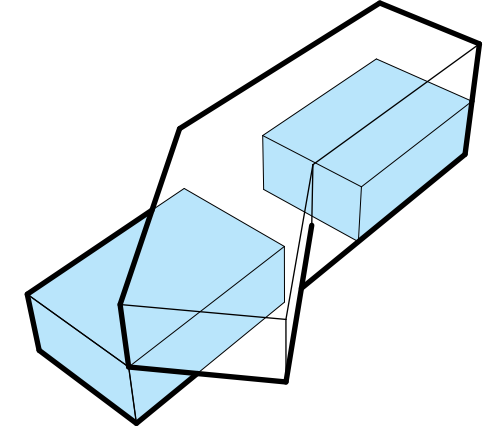
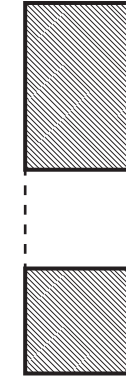
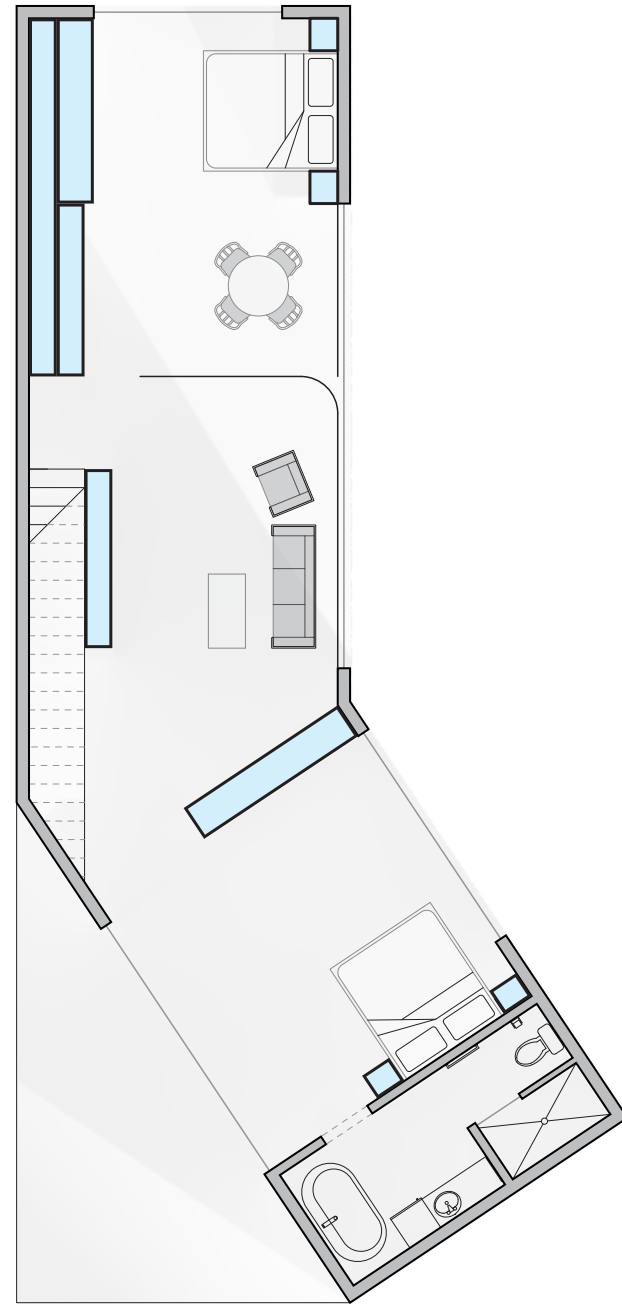
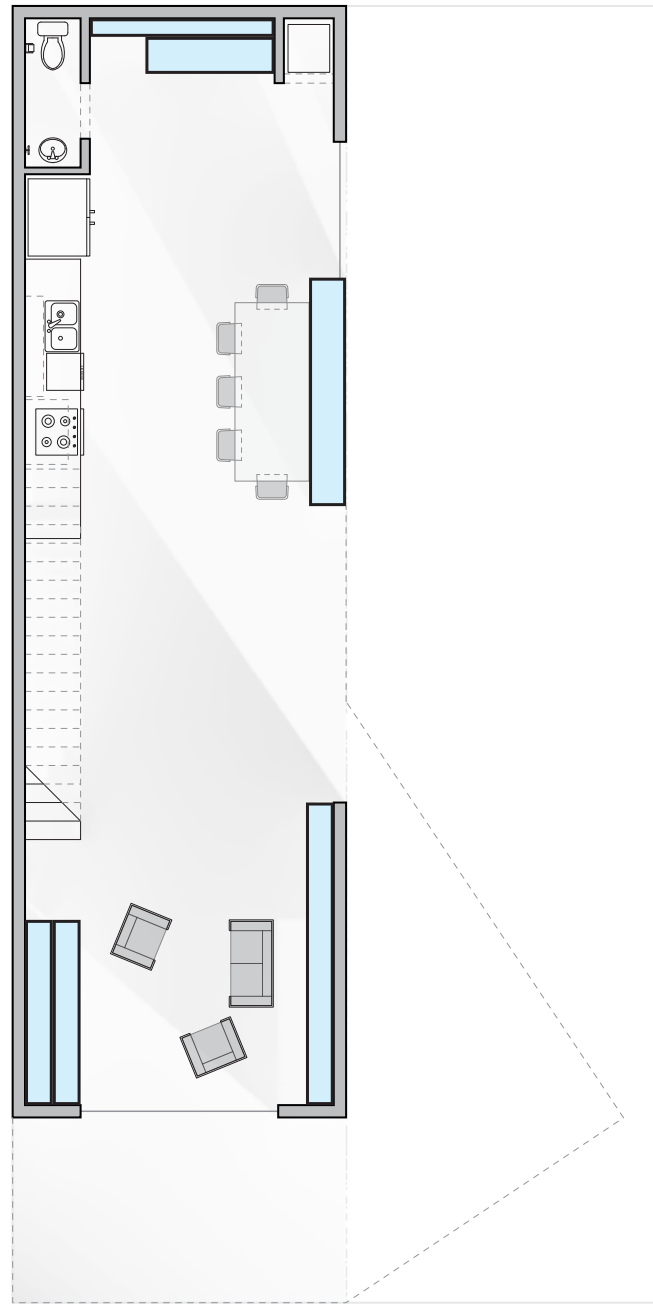


Rest in the privacy of the master bedroom created by a shifting wall that occupies previously public spaces.

Switch projected program to allow occupant to change the function of this space to fit their needs at any given moment.

Welcome longer term guests in a previously public space that becomes a private bedroom.

Collapse space during the day to make room for other program with the help of a Murphy bed.

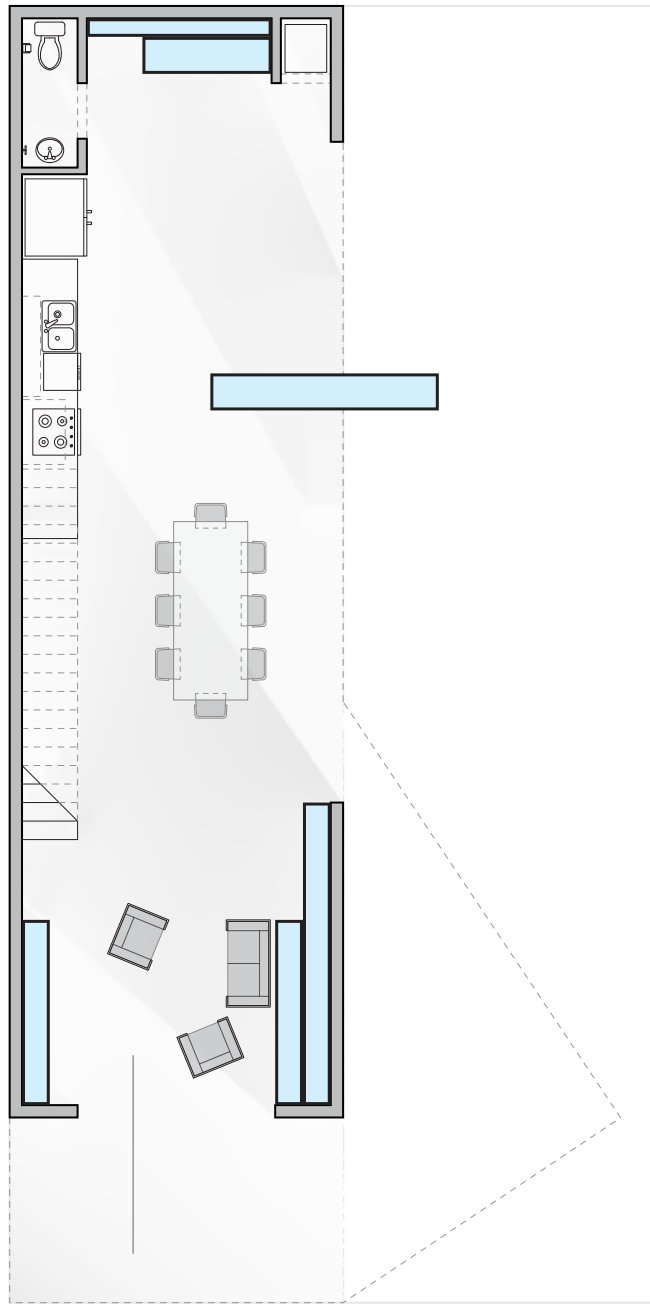


Dogtrot

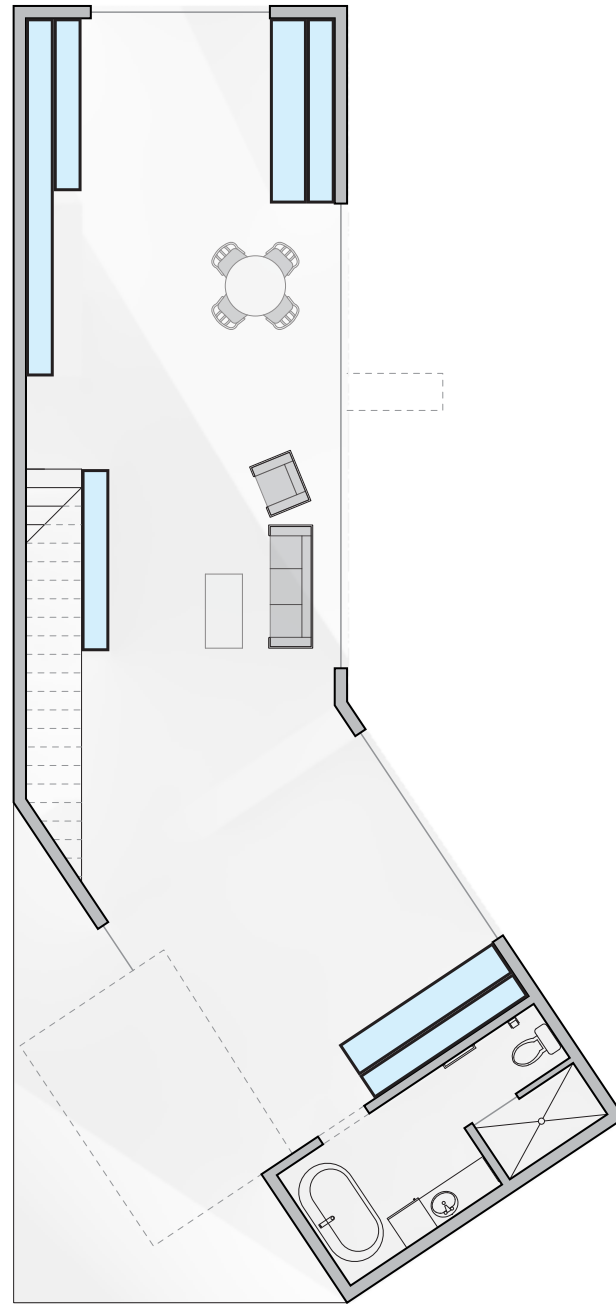
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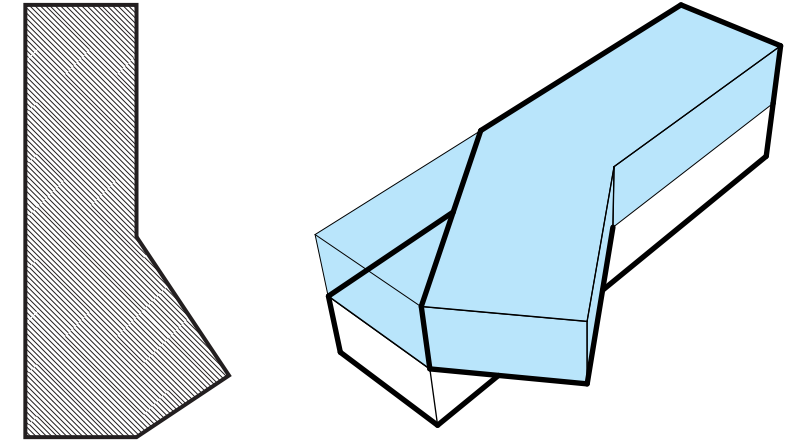
Dogtrot houses (1800s-1930s) are known for their unique form, defined by two separate spaces that are connected by a covered breezeway or “dogtrot.” Representative of log cabin construction, this classic housing typology uses natural ventilation and intelligent thermal planning to create a comfortable living environment. Typically, one side of the house was used as a kitchen and the other was used as a living space or bedroom.



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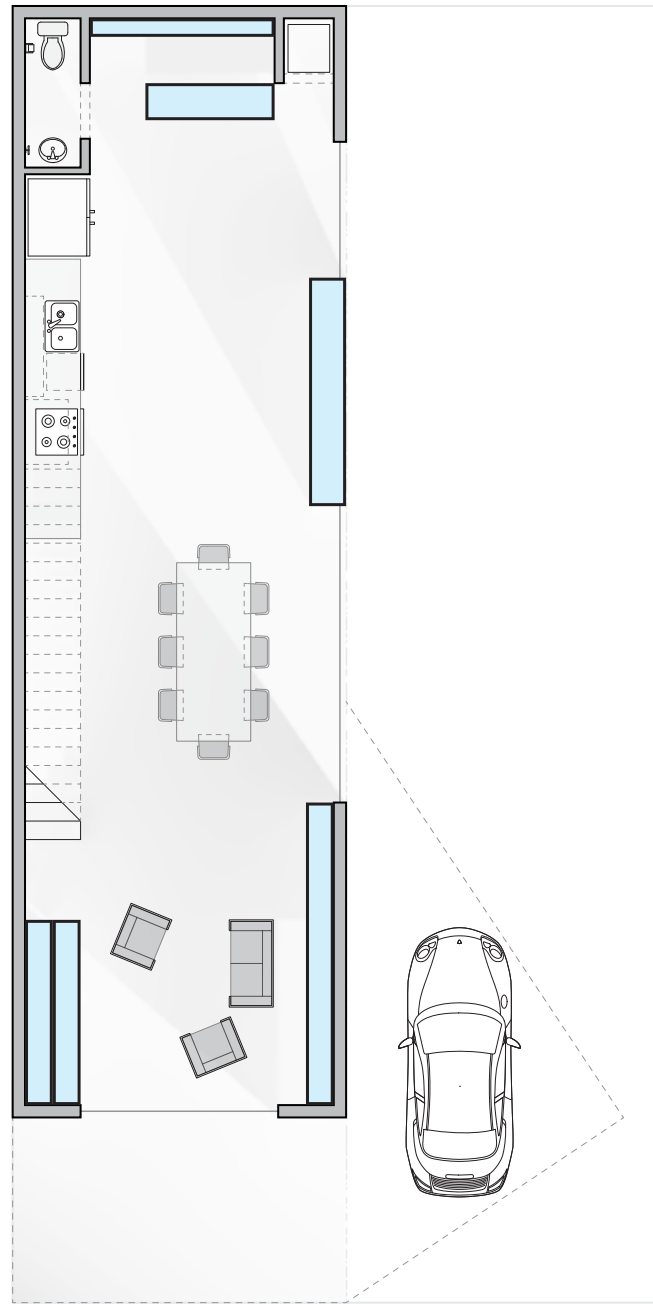


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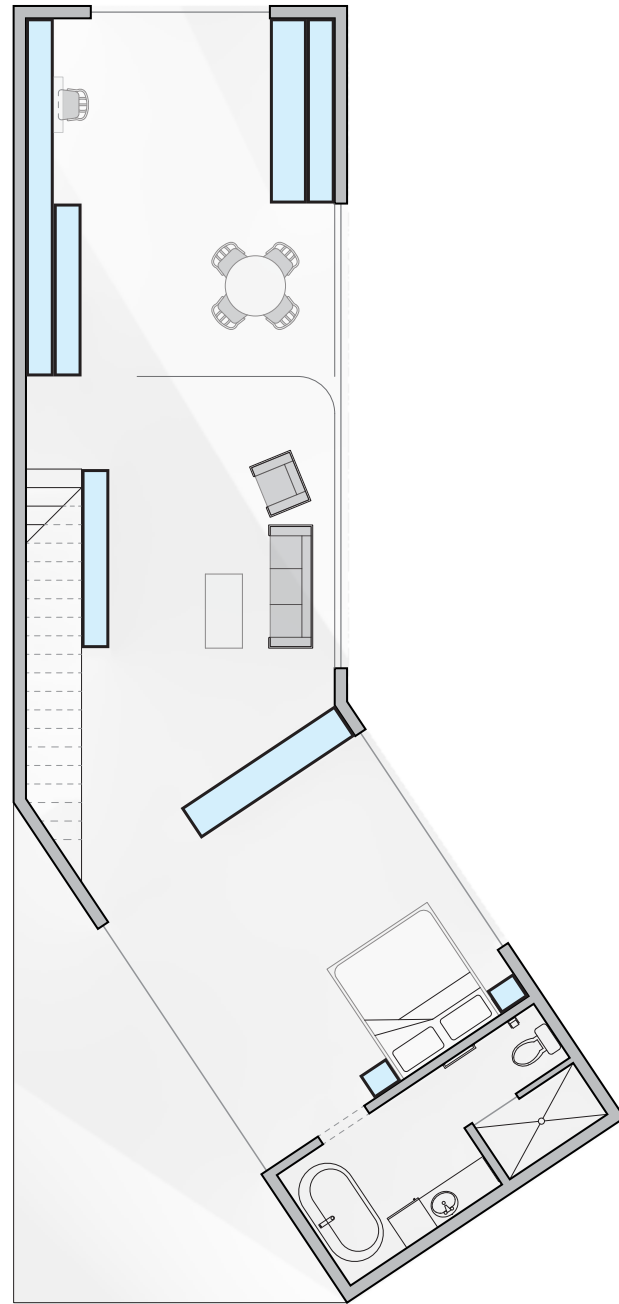


Modernist Box houses (1900-present) are generally simple transparent forms that are sometimes lifted off of from the ground to allow outdoor circulation beneath the living space. Inside, the house gains an open floorplan through the maximum reduction of interior divisions. This free plan arrangement establishing a flexible space that is capable of serving a variety of functions and user groups.

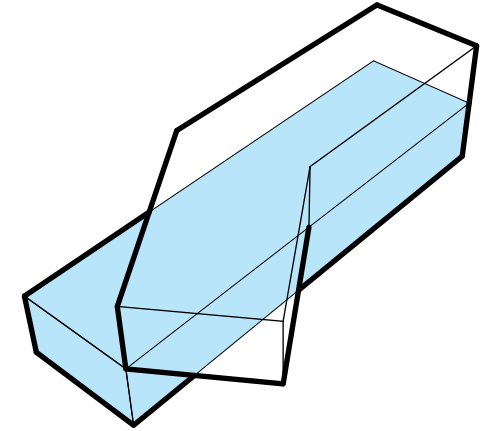
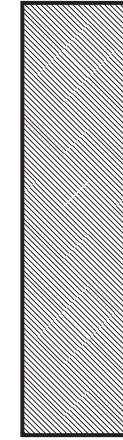
Modernist Box



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+1



Shotgun

Shotgun houses (1860s-1920s) are long, narrow, rectangular “program catalogs,” where users must move through a subsequent series of rooms until they arrive at the needed option. Rooms are stacked along the length of house due to a narrow silhouette and limited lateral area. A long hallway running the length of the building connects users to interior program while providing exterior access on either end.



Private bedrooms

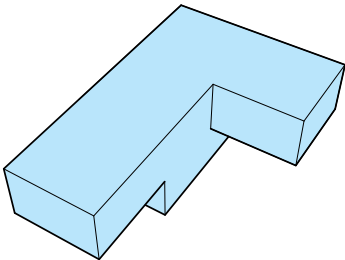


Entertainment space

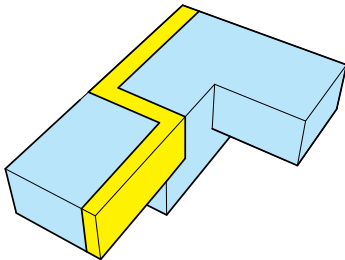
CANTILEVER

1,834 sq.ft.

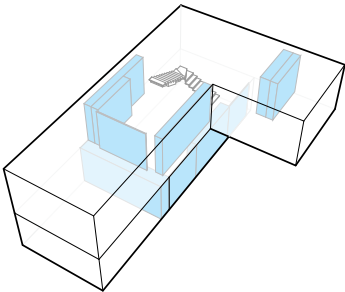
- | | | |
|-----------------|----------------|--------------|
| 2 bedroom | Dining Room | Office |
| Master Bathroom | Play Room | Porch |
| Half Bathroom | Theater | Roof Terrace |
| Kitchen | Breakfast Room | Garage |
| Library | Craft Room | Yard |
| Art Studio | Living Room | |



PROTOFORM



STATIC CORE



HOUSE

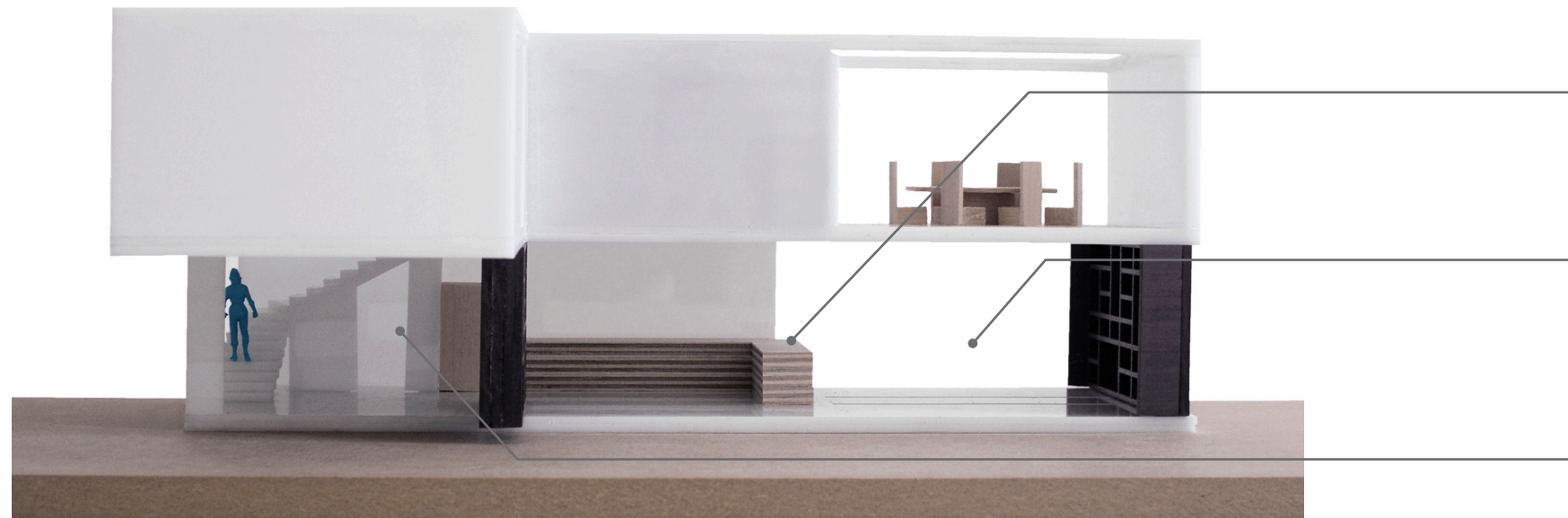


Rotate to blend indoor and outdoor spaces and expand interior program.

Lift outdoor space to allow for maximum flexibility on both the first and second floor.

Condense kitchen area to create an intimate space meant for one or two people.

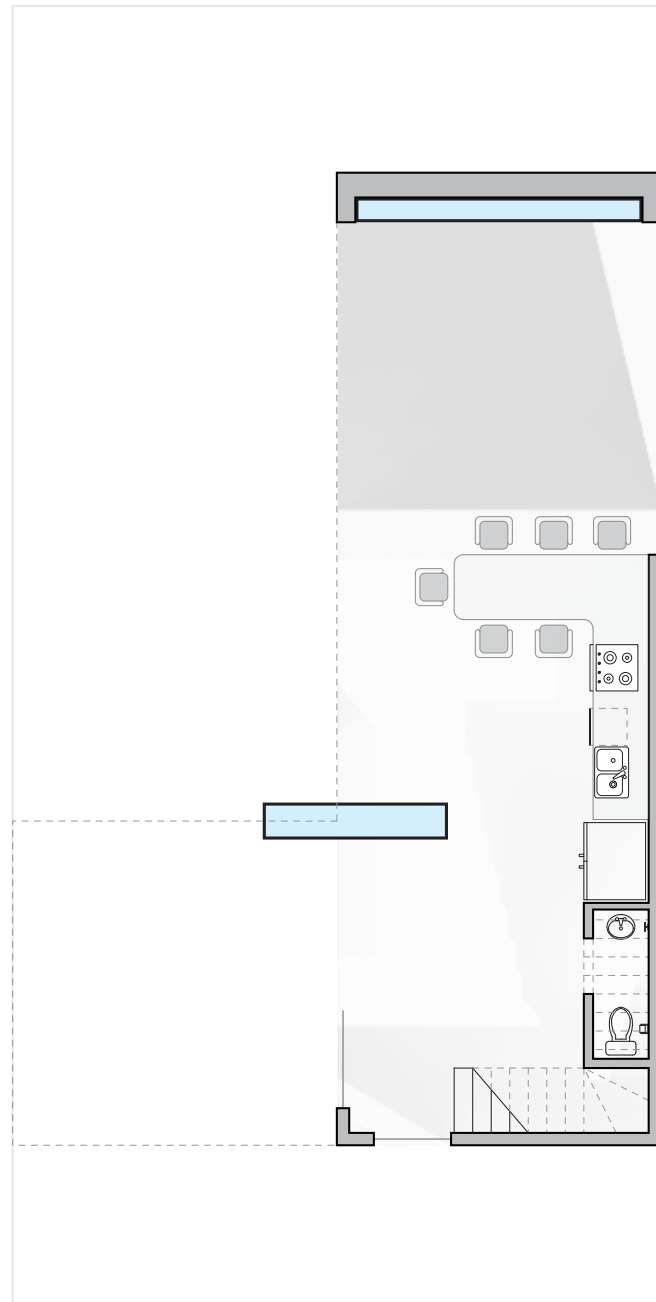
Cantilever second story living to claim outdoor room and grow connection with the neighborhood.



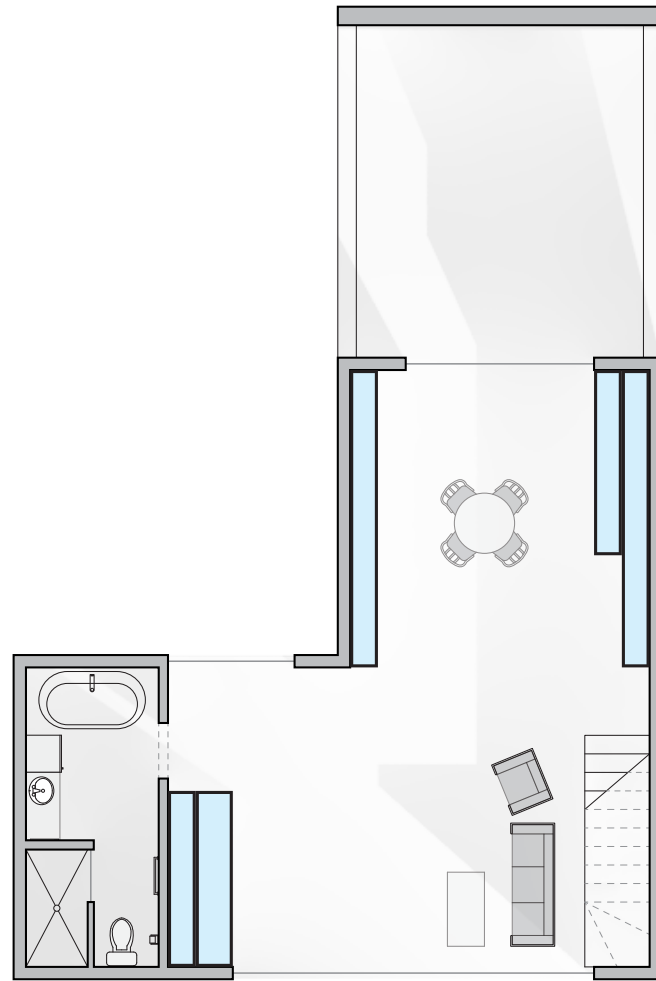
Expand the kitchen envelope to create a multi-dimensional social space, transforming the counter from a boundary to a connecting element.

Extrude envelope "brackets" to transform exterior rooms into expanded interior program.

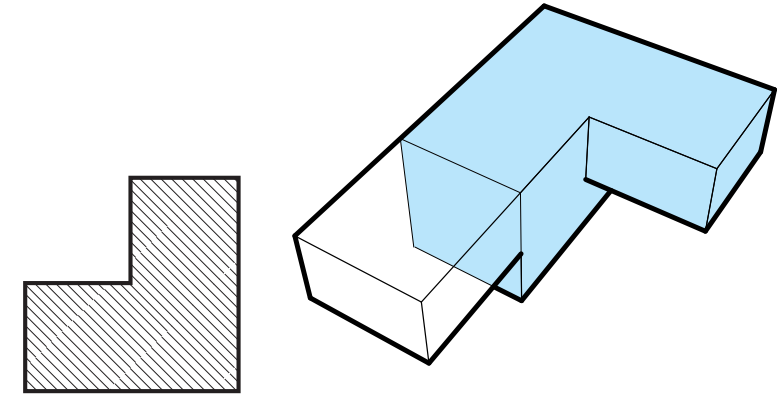
Connect previously separated space and **Separate** previously connected space.



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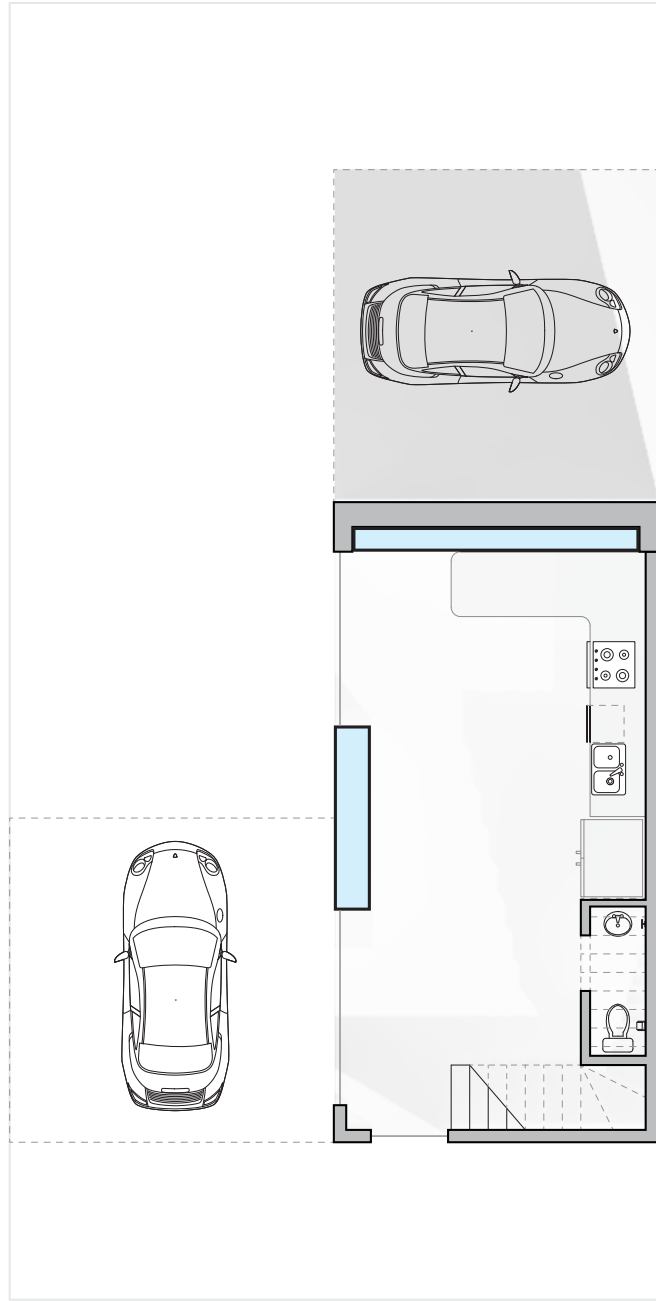


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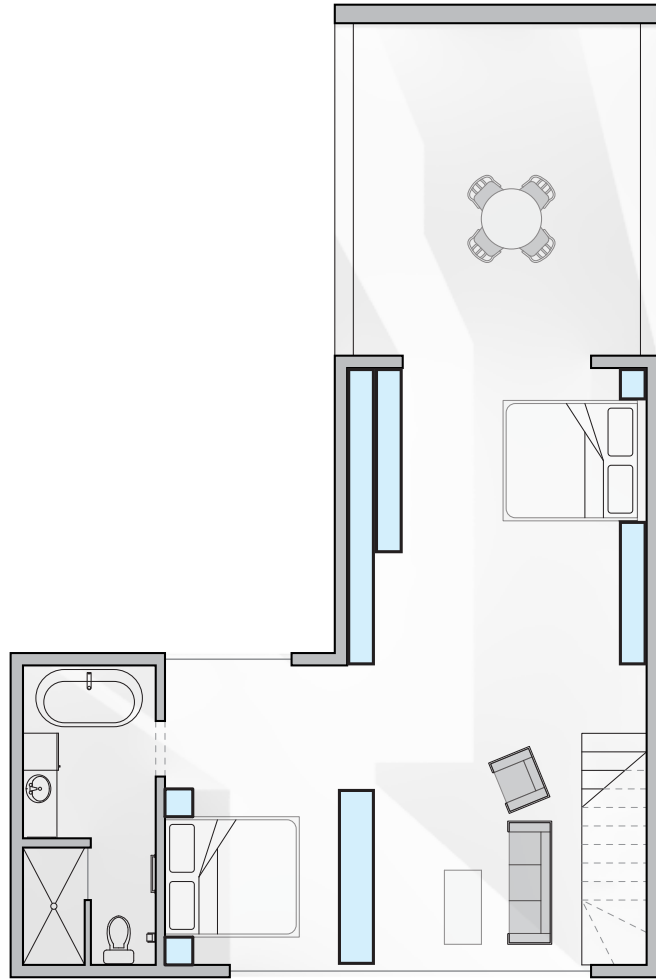
Lofts have smaller footprints and stacked spaces that typically become more private on upper levels. A loft typology may also employ a multi-use space that mixes all program into one upper level room.

Loft

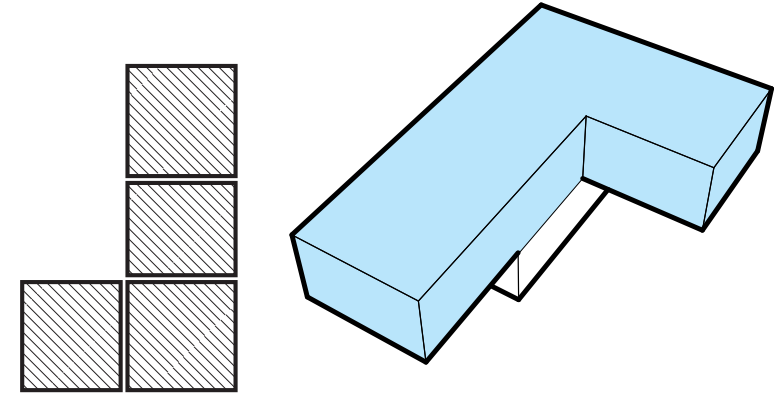


Bungalow

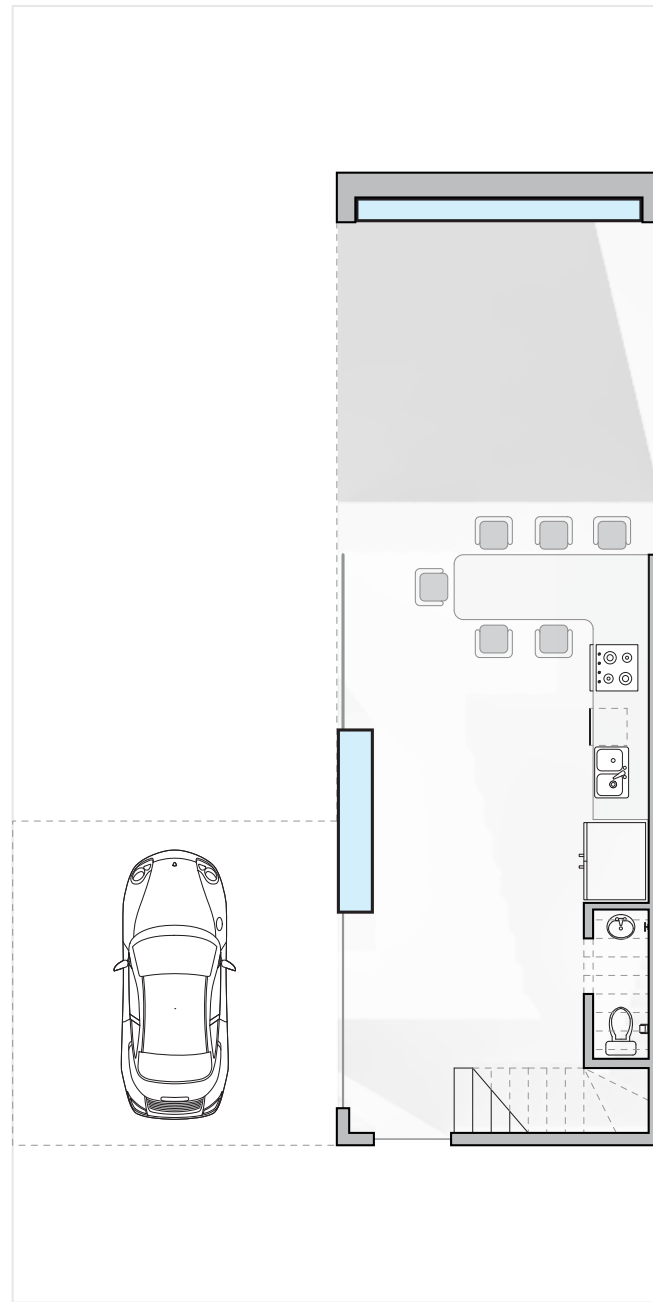
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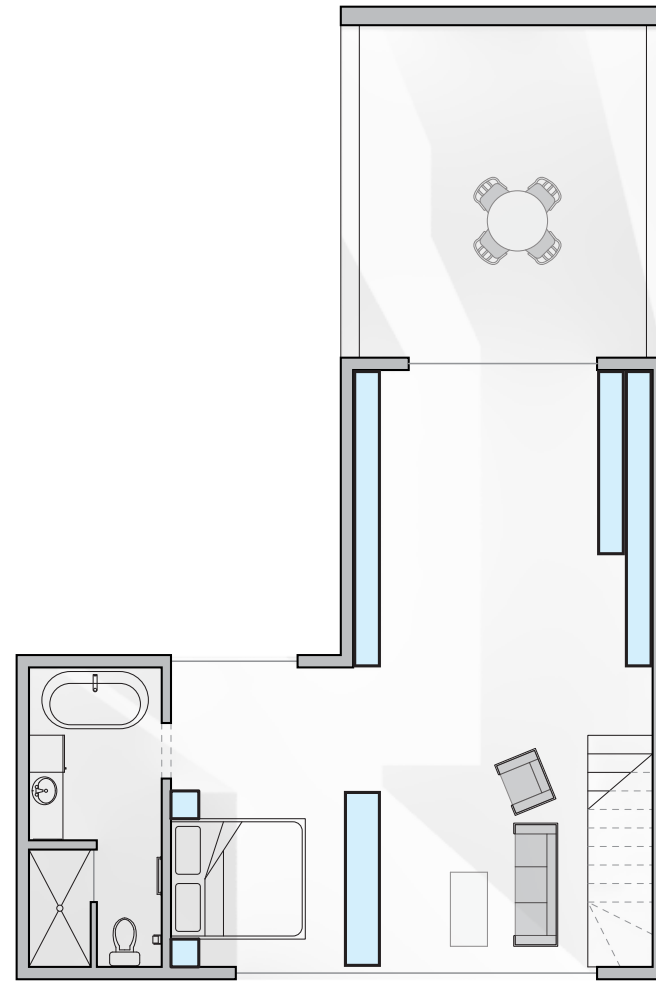
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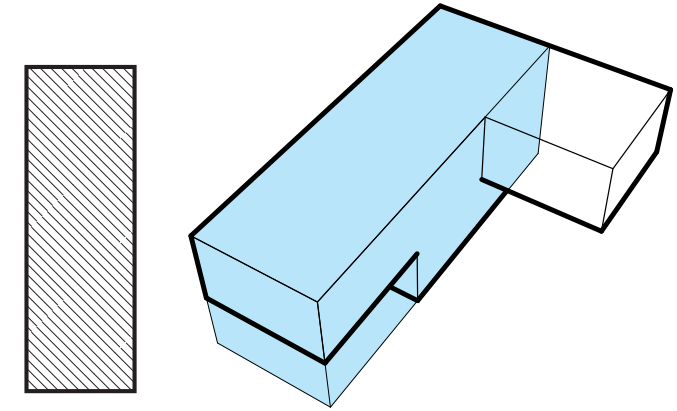
California Bungalow houses (1910-1930) are typically one to two stories, composed of a series of highly individualized and pre-defined programmatic spaces.



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+1



Camelback Shotgun houses (1900s) evolved from a need for more space than the classic shotgun house provided. To solve this problem and expand spatial capacity, later generations of the shotgun house added a second story, garnering the moniker “Camelbacks.”

Shotgun



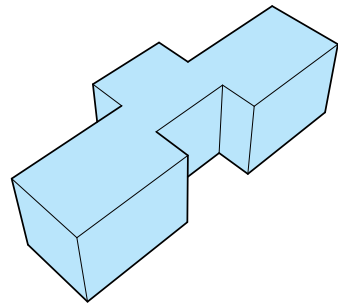
Intimate kitchen



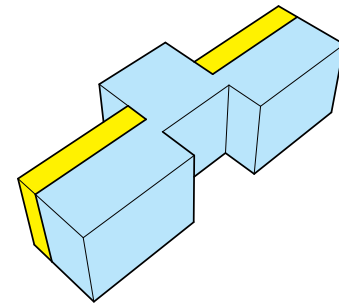
Open kitchen

BROKEN SHOTGUN

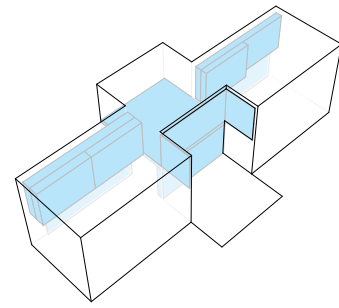
- 2,367 sq.ft.
- | | | |
|-----------------|----------------|-------------|
| 2 bedroom | Dining Room | Living Room |
| Master Bathroom | Play Room | Office |
| Half Bathroom | Laundry Room | Porch |
| Kitchen | Theater | Yard |
| Library | Breakfast Room | |
| Art Studio | Craft Room | |



PROTOFORM



STATIC CORE



HOUSE



Shift walls to allow this space to reconfigure, replace, or erase its program with a single swipe.

Slide this wall to hide or reveal three different program types: bedroom, reading room, and TV room.

Pull envelope walls to create separation or connection and demonstrate how placement influences performance of the house.

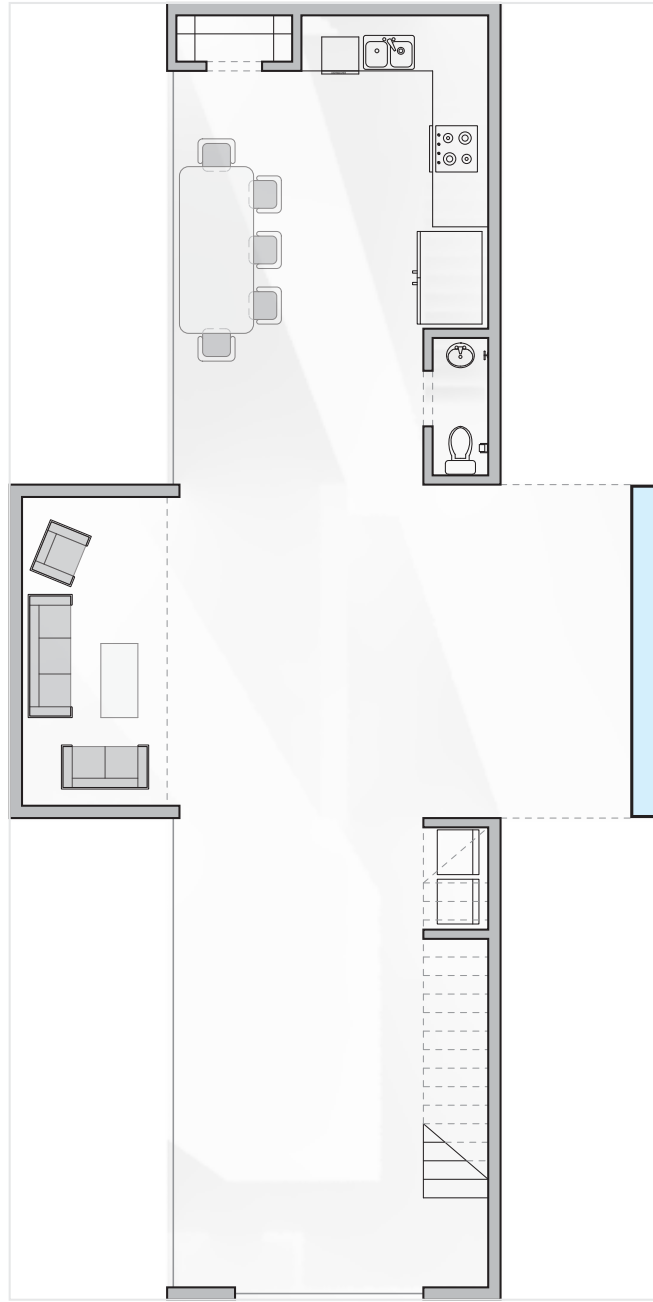


Centralize movement to create a cruciform configuration, where the center of the home becomes activated public space.

Flip beds to allow bedrooms to collapse during the day, making room for other program.

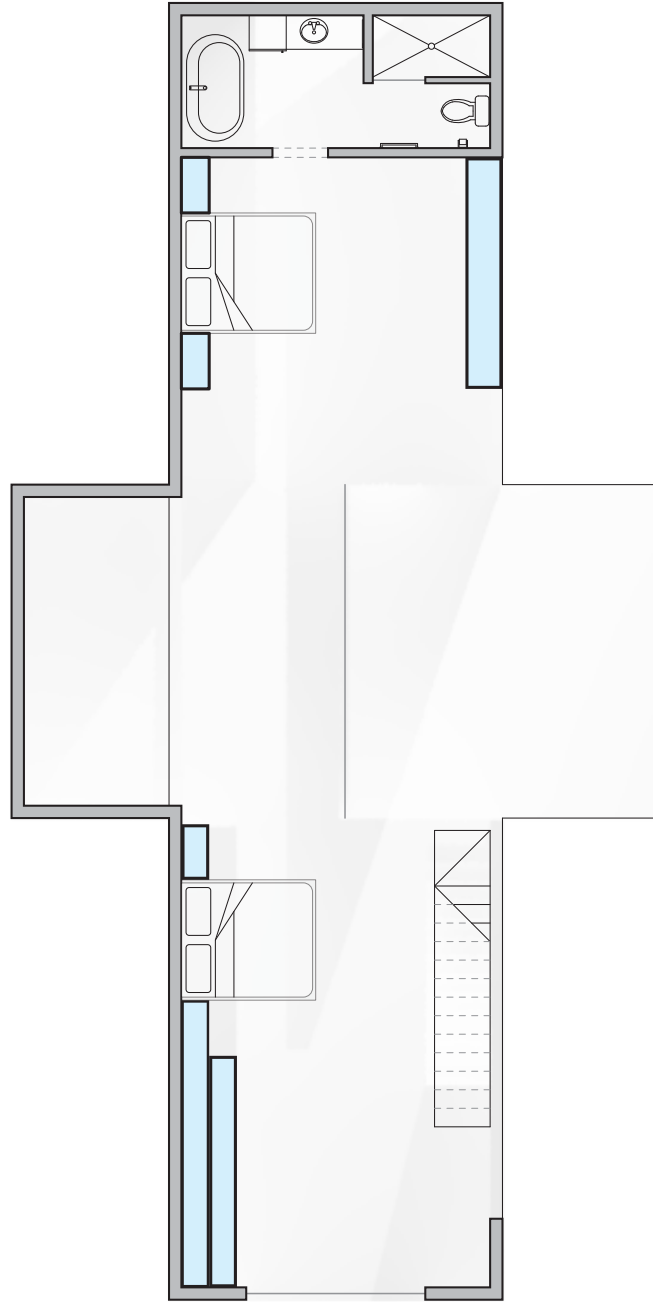
Trade program from the bedroom to the reading room by shifting the placement of the entertainment System along the sliding wall.

Split shifting walls to increase the number of programmatic combinations available.

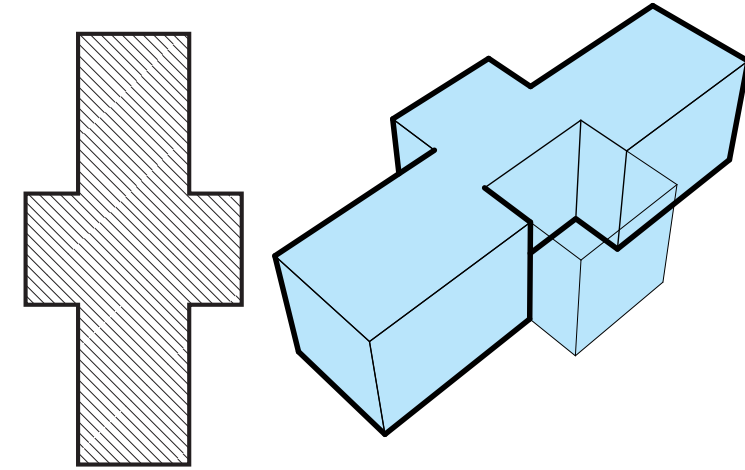


Cruciform

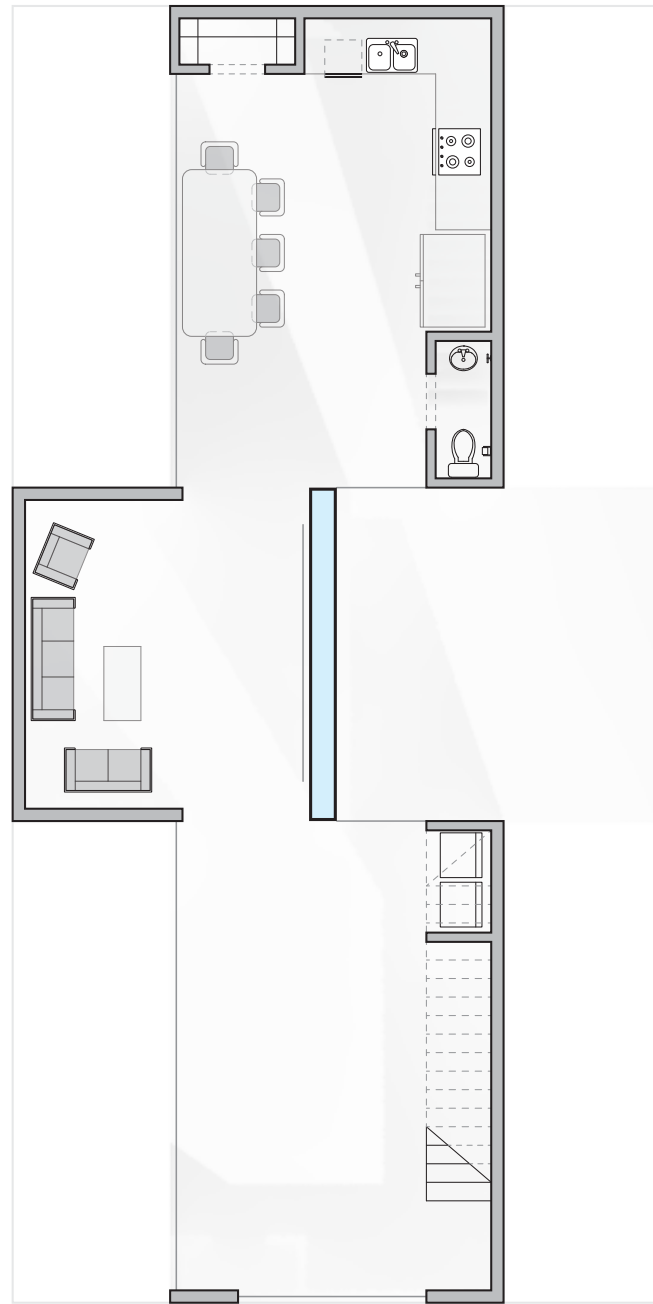
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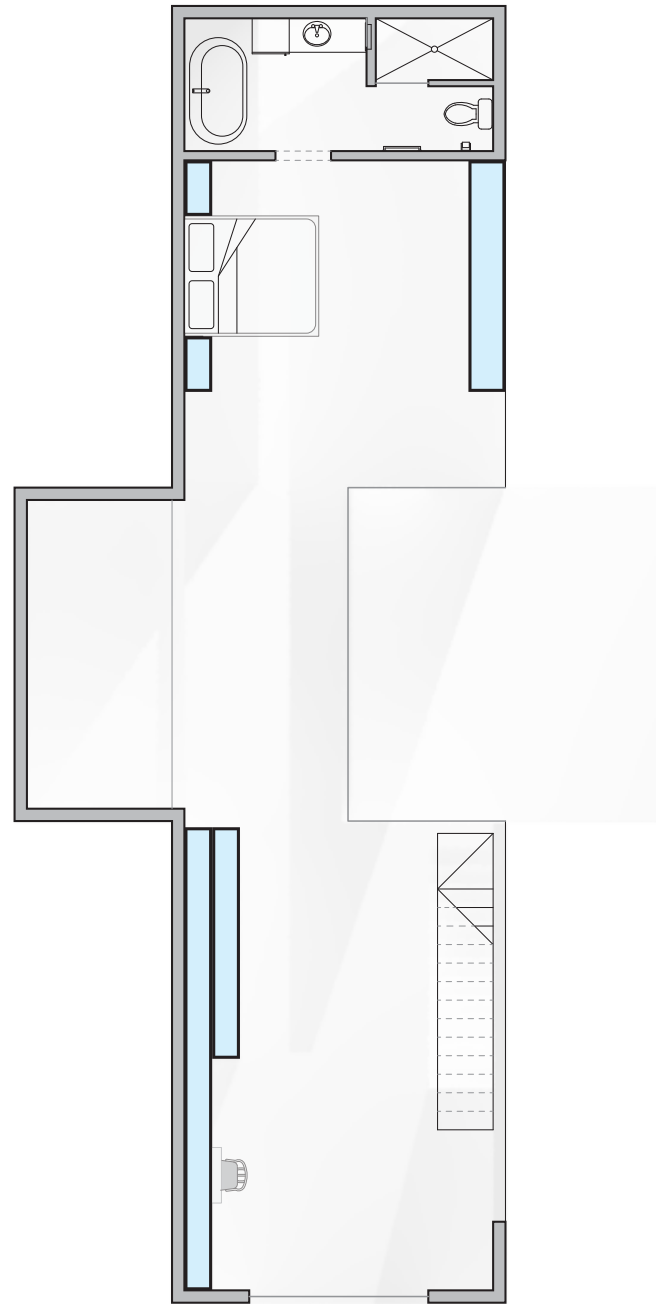
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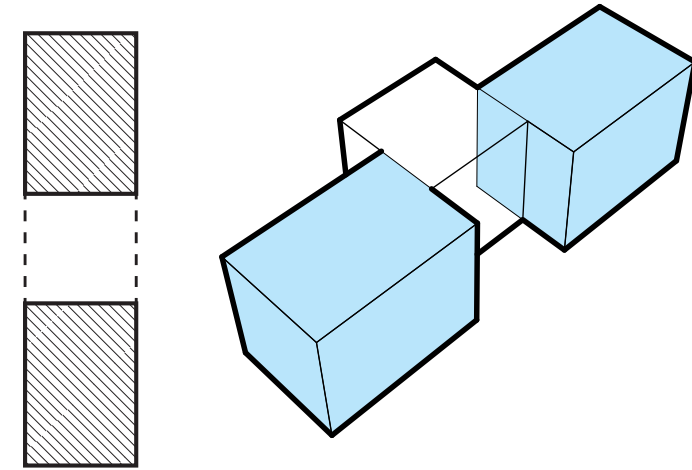
The pinwheel house form, commonly employed by Frank Lloyd Wright, uses a similar formation to the cruciform. In the cruciform, program is laid out in a radiating pattern with all circulation passing through a central social nexus.



0

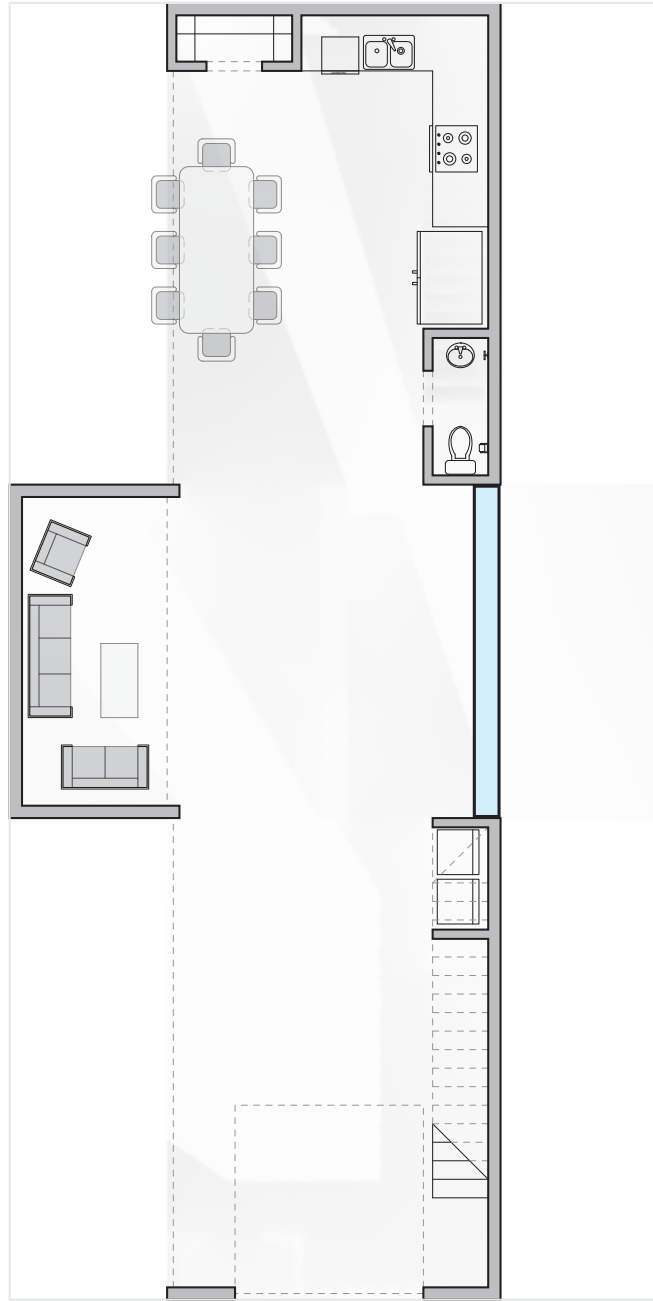


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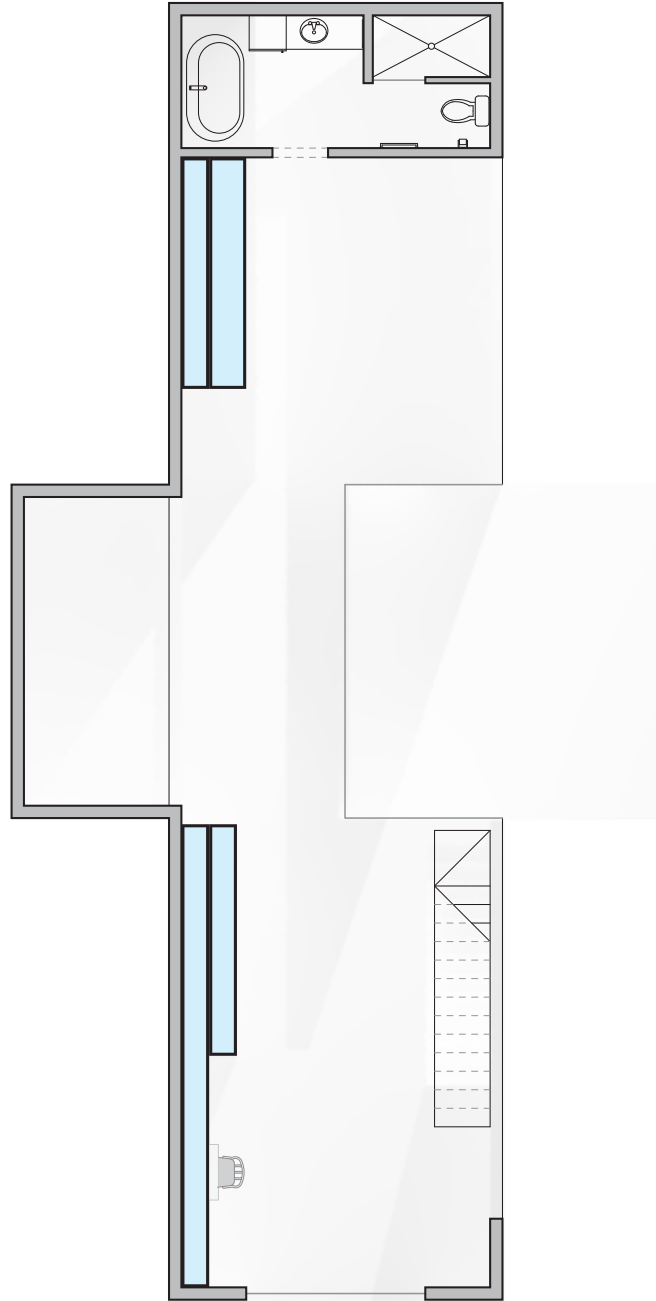
Dogtrot

Camelback Dogtrot houses are a two-story version of the classic dogtrot typology, with the breezeway extending on both levels. This creates four separate rooms divided and connected by a central semi-outdoor space.

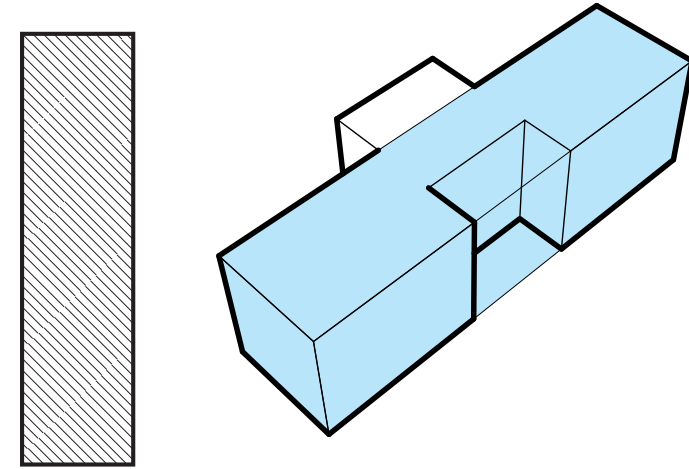


Shotgun

0



+1



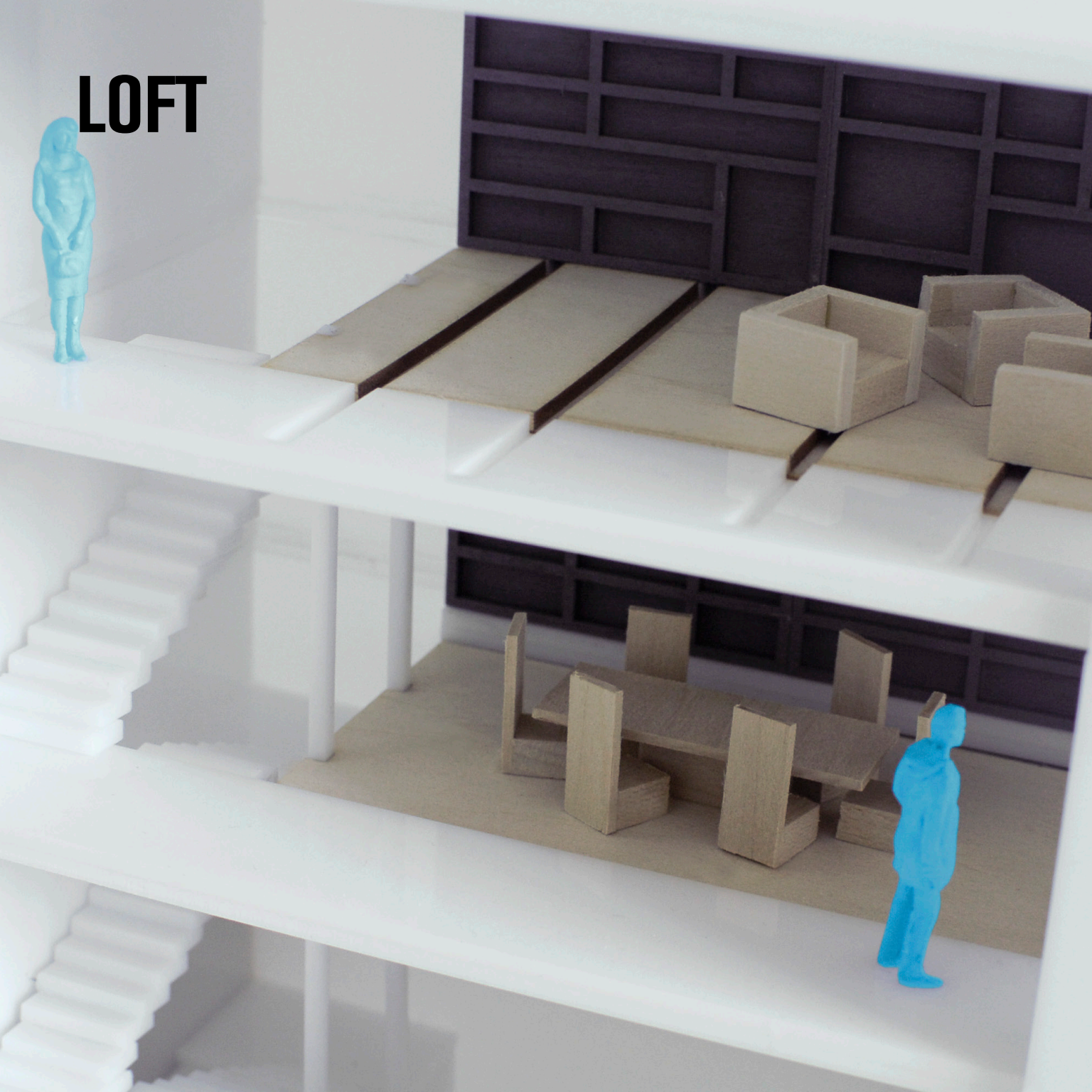
Camelback Shotgun houses (1900s) evolved from a need for more space than the classic shotgun house could provide. To expand spatial capacity, later generations of the shotgun house added a second story, garnering the moniker “Camelbacks.”



Voided center



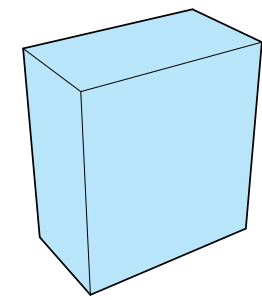
Social nexus



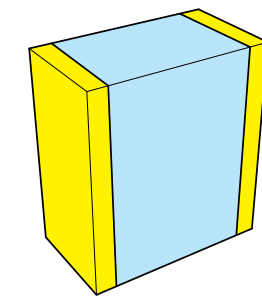
LOFT

2,752 sq.ft.

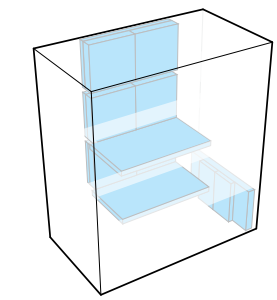
3 bedroom	Dining Room	Living Room
Master Bathroom	Play Room	Office
Half Bathroom	Laundry Room	Porch
Kitchen	Theater	Yard
Library	Breakfast Room	
Art Studio	Craft Room	



PROTOFORM



STATIC CORE



HOUSE



Circulate through a vertical catalog of programmatic space.

Relax in spaces that can be converted between reading room, TV room, living room, and bedroom.

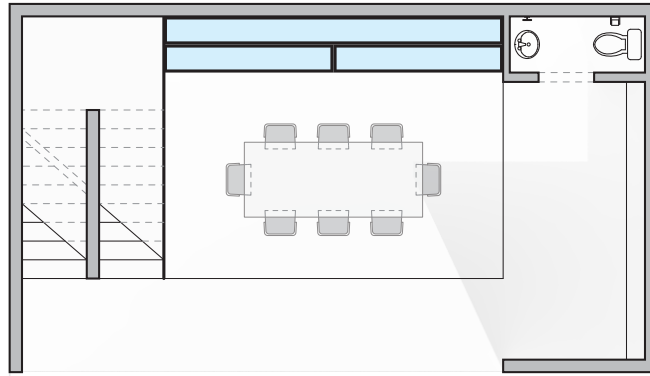
Maintain static floor area to allow access the permanent program on each floor at all times.

Loft dining and seating area upwards through the vertical catalog, to alternate between reading room, TV room, living room, and office.

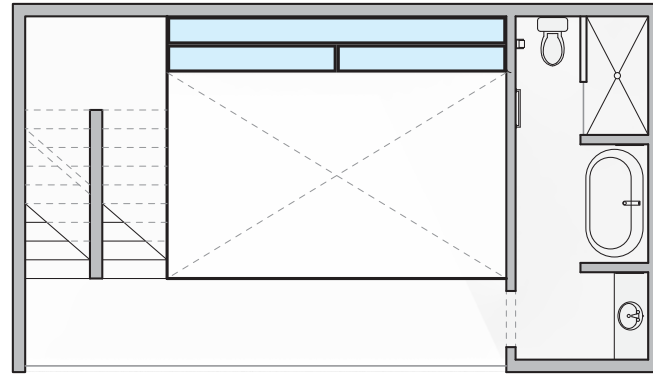
Transpose central platform to expand floor area and furniture possibilities.

Raise ceilings to create double height spaces when floor platforms are transposed - one of the four levels will always be double height.

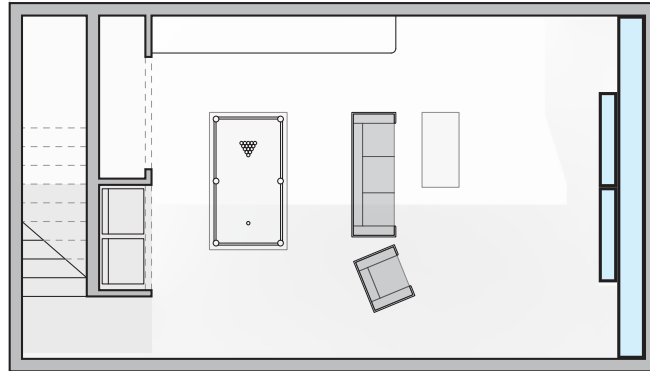
Illuminate below grade program through vertically mobile floor platforms, blending ground and subterranean floors.



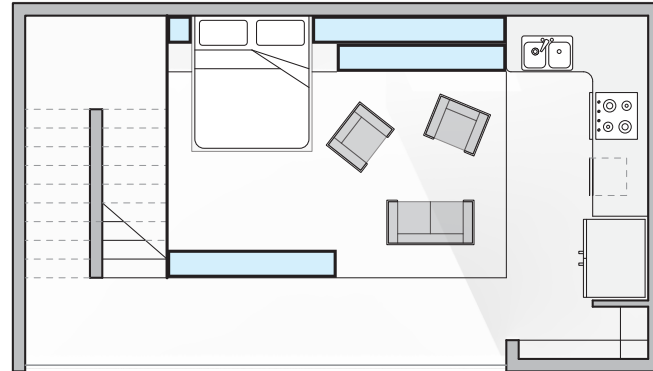
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+2

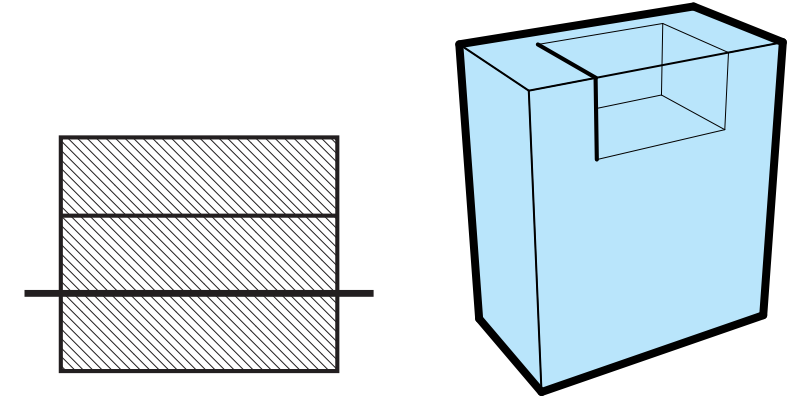


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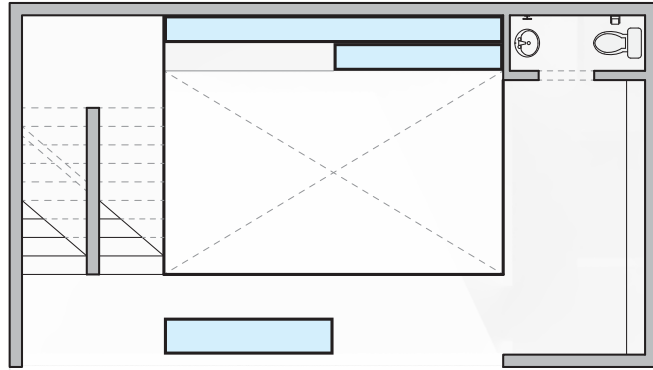


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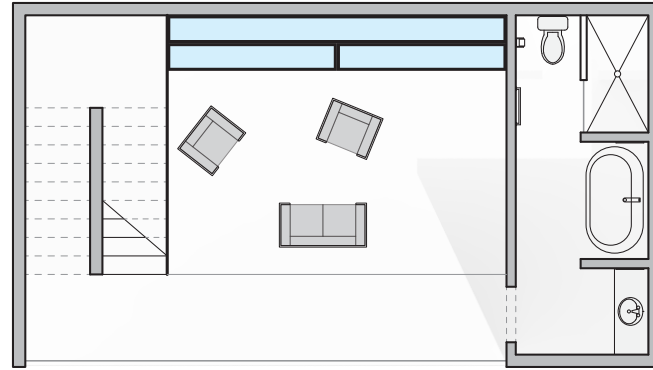
Bungalow



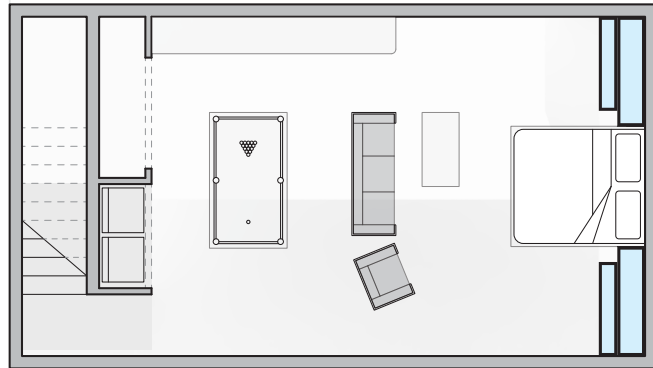
Chicago Bungalow houses (1910-1940) are typically two stories with a full basement. As in a California Bungalow type, rooms are highly differentiated, however the Chicago Bungalow places more emphasis on sectional connections.



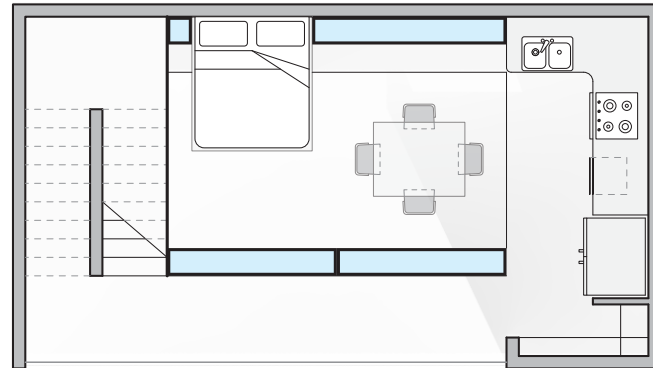
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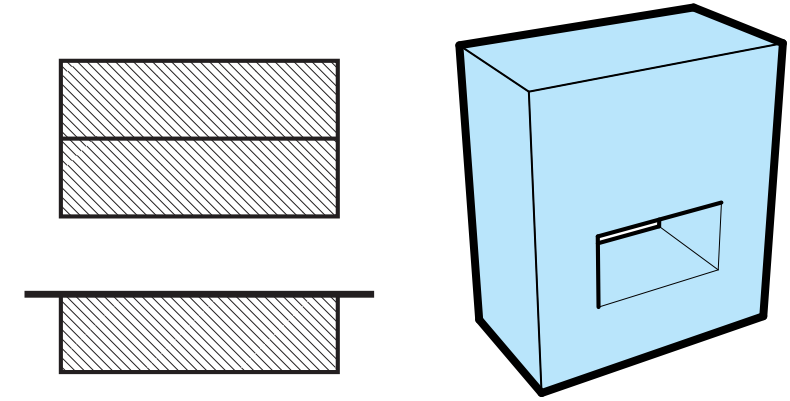
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-1

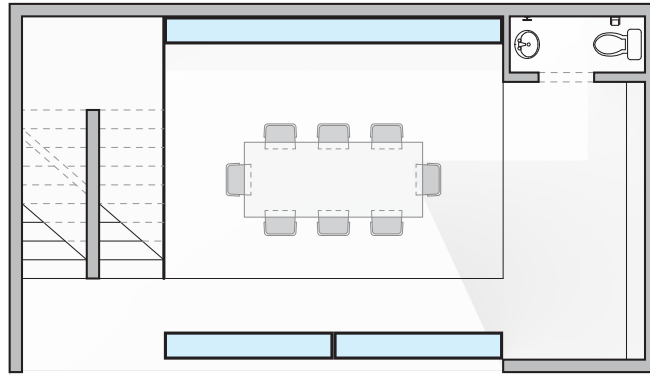


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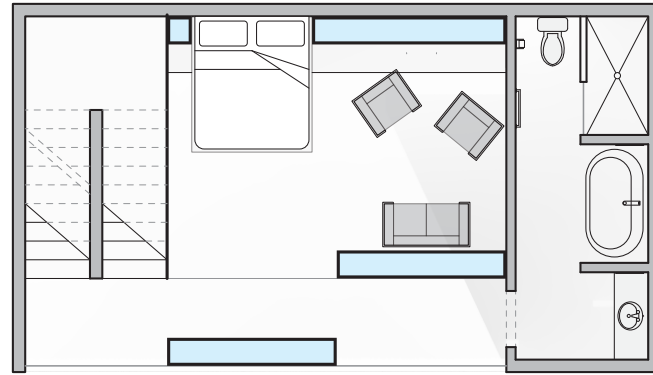


Loft

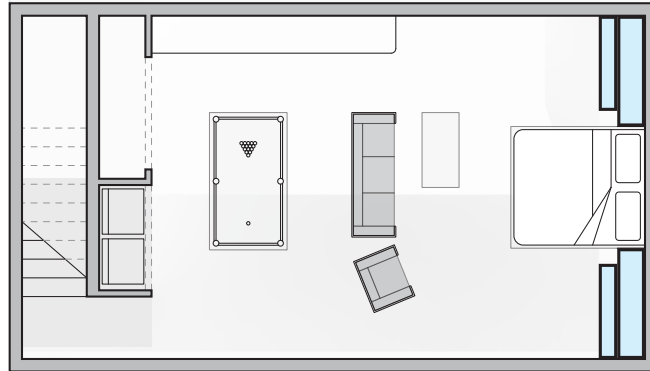
Split Lofts combine a lifted living space and a basement, separated by a semi-outdoor breezeway. Like an upended dogtrot, split lofts separate public and private spaces with a semi-outdoor circulation space or breezeway.



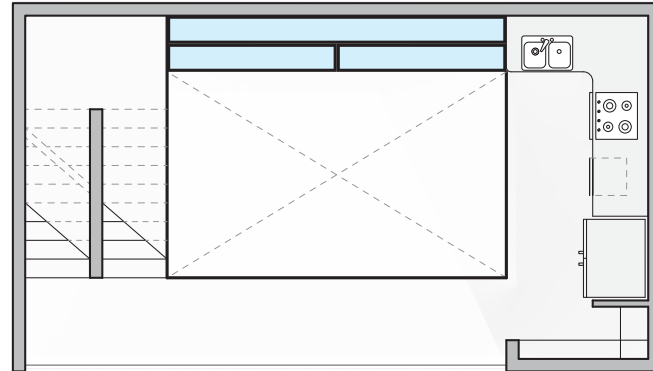
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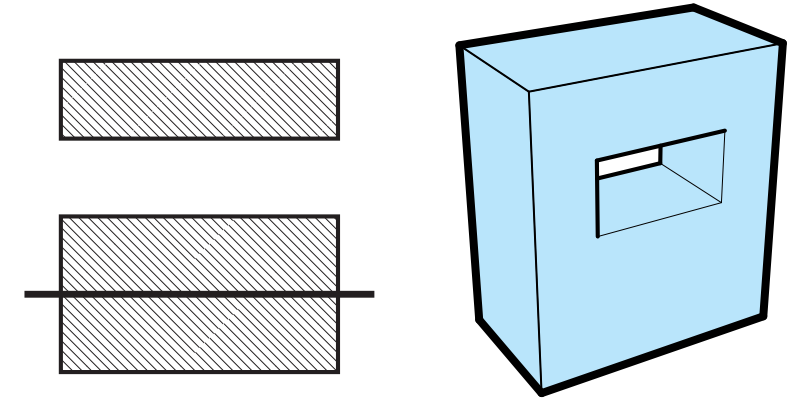
+2



-1



+1



Penthouse

Penthouses have an upper-level bedroom separated in section from the rest of the program below, allowing for enhanced views and increased privacy.



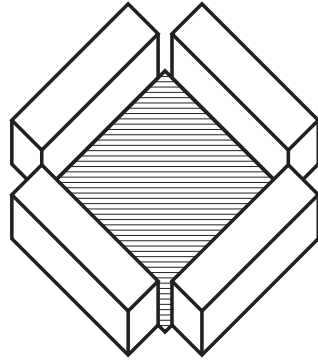
Comfort seating



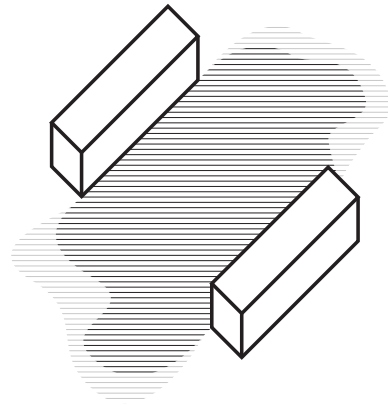
Formal dining

NEIGHBORHOOD

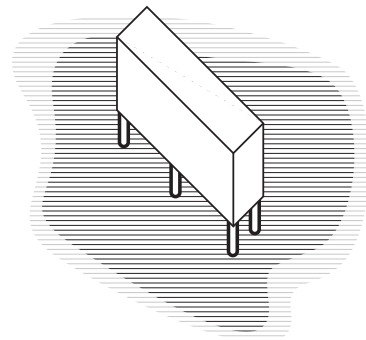




enclosed & defined

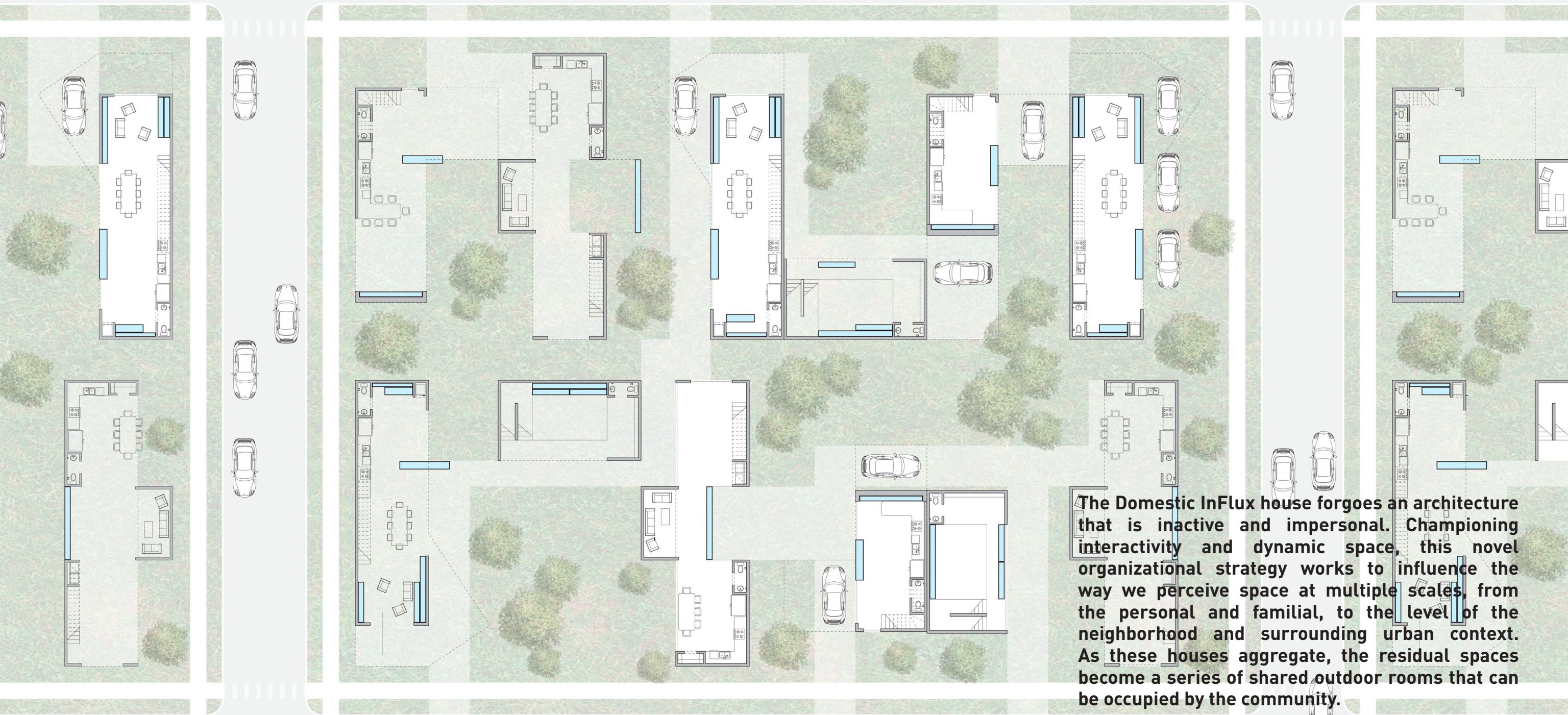


flexible



open & undefined

There have been many studies about how to claim space related to a site. Each of these examples claims unbuilt space and enables functionality in a unique way. Defined space is rigid, Flexible space is somewhat defined, but leaves room for expansion, and Open space is amorphic and limitless.

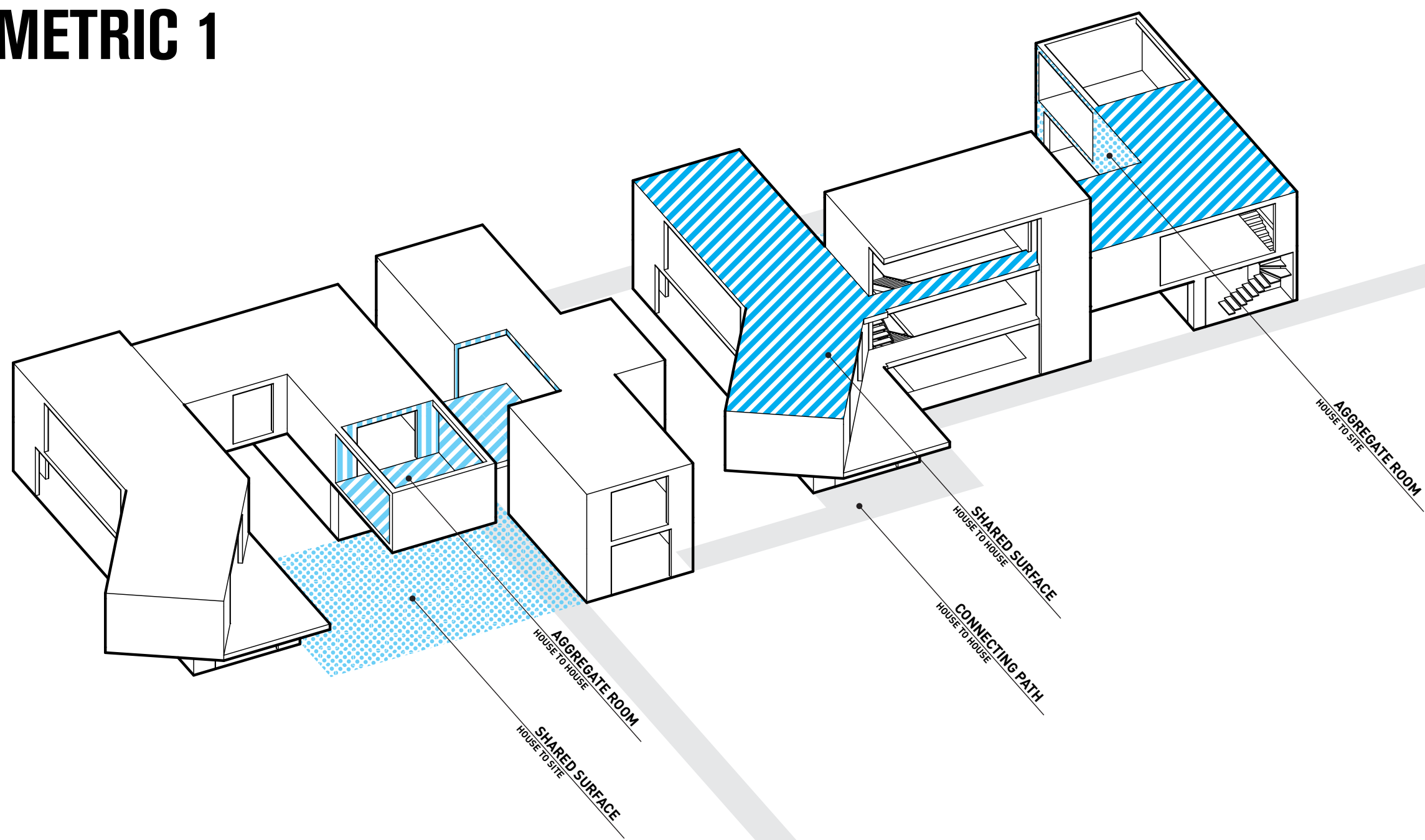


The Domestic InFlux house forgoes an architecture that is inactive and impersonal. Championing interactivity and dynamic space, this novel organizational strategy works to influence the way we perceive space at multiple scales, from the personal and familial, to the level of the neighborhood and surrounding urban context. As these houses aggregate, the residual spaces become a series of shared outdoor rooms that can be occupied by the community.

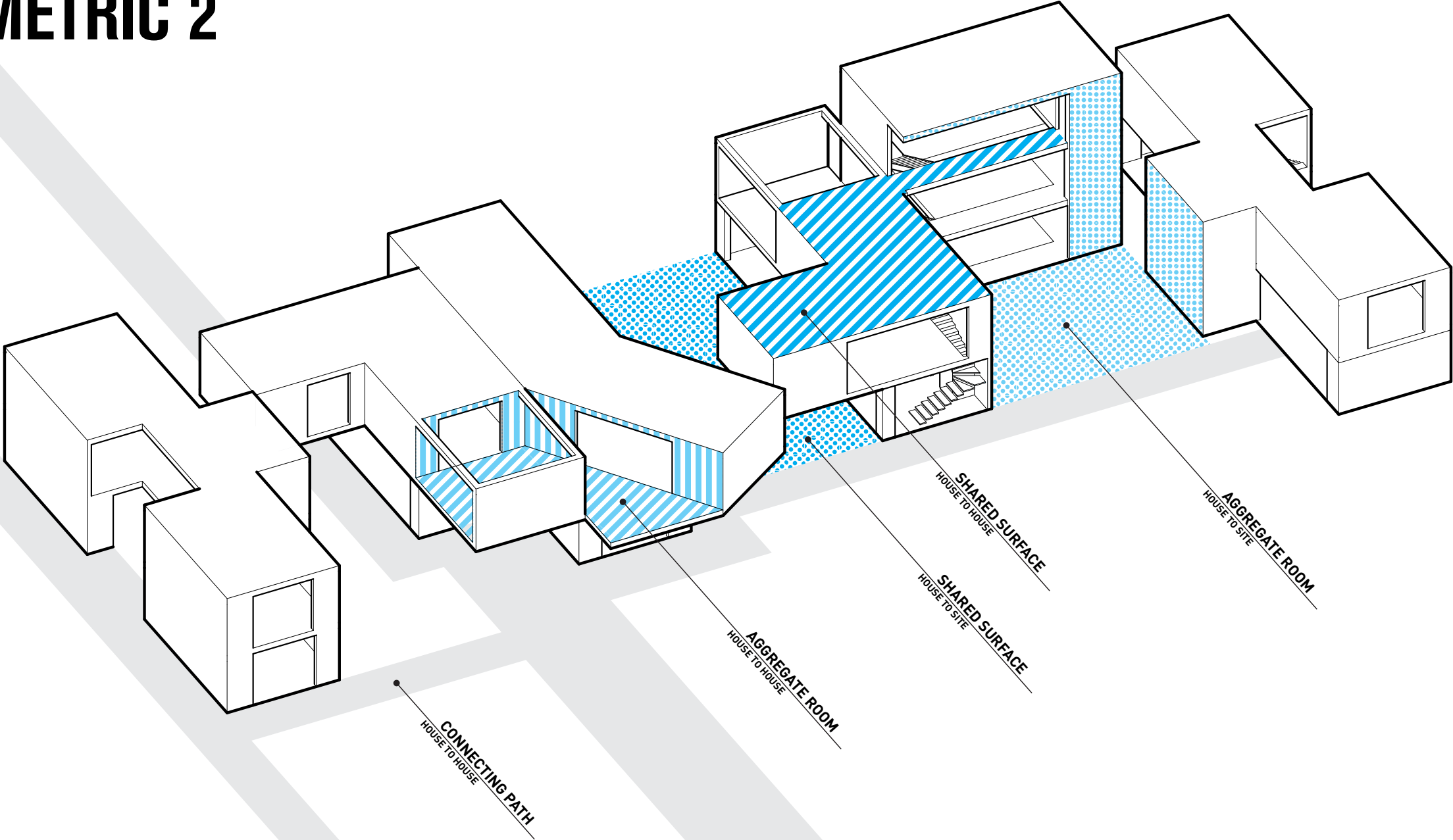


Cantilevers blur the line between interior and exterior and help erase the boundaries that typically separate and section outdoor space.

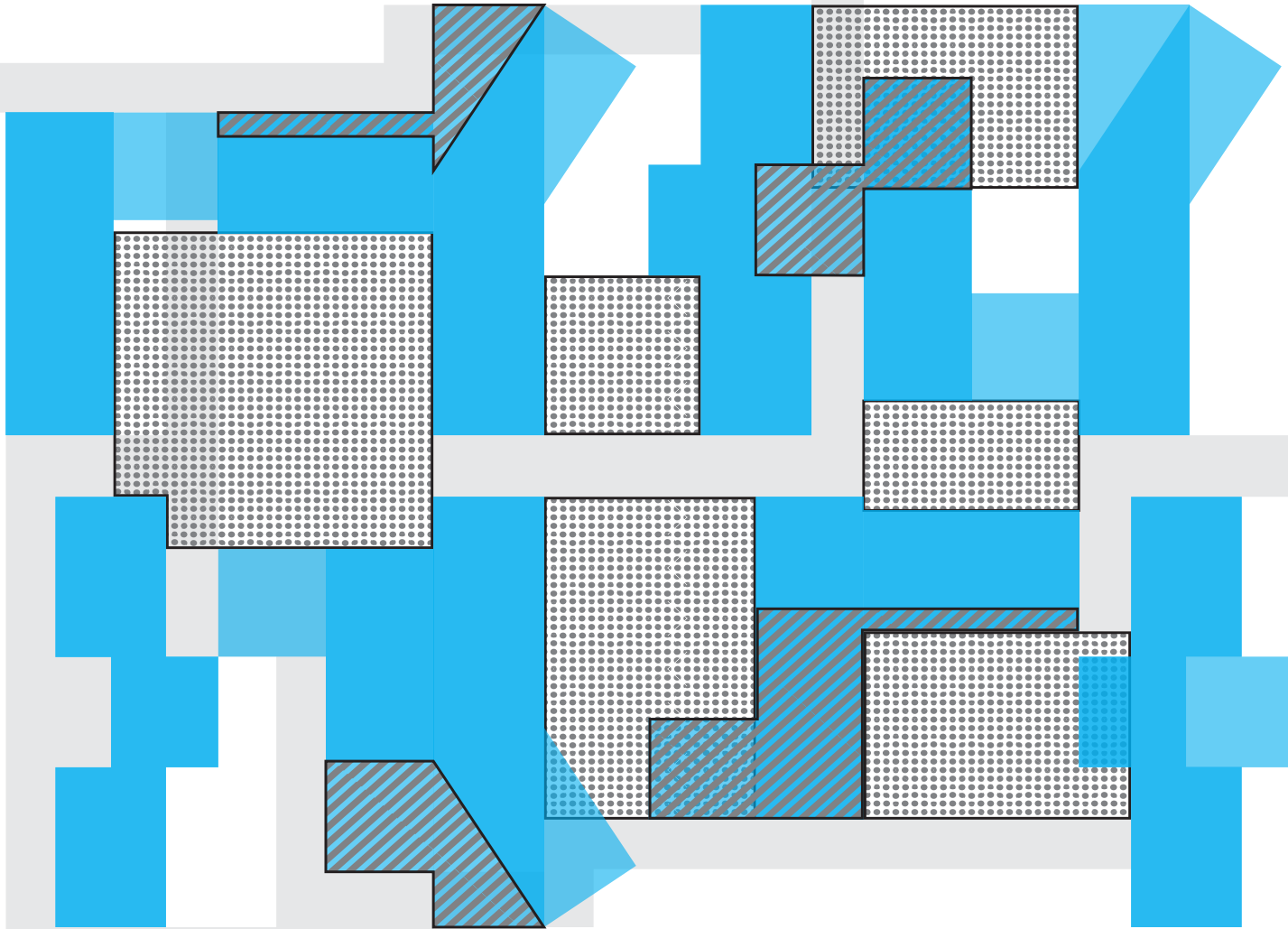
AXONOMETRIC 1



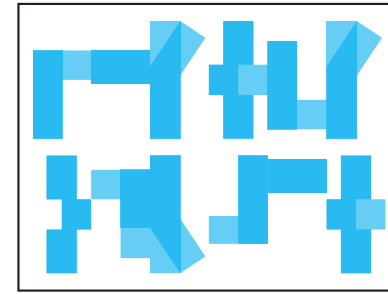
AXONOMETRIC 2



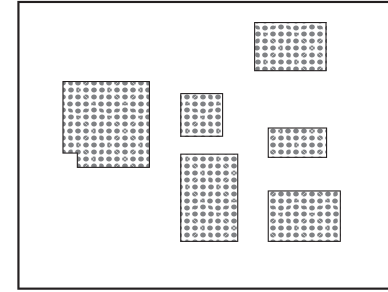
AXONOMETRIC 1



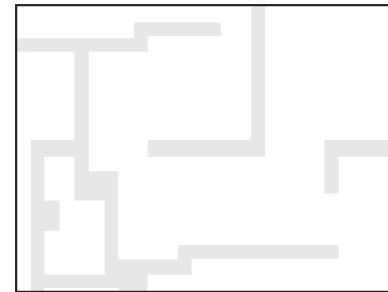
AXONOMETRIC 2



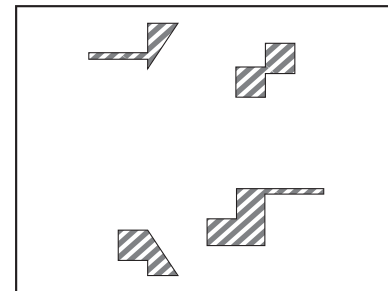
HOUSES



HOUSE TO SITE



CONNECTING PATHS



HOUSE TO HOUSE

Outdoor Rooms and **Shared Surfaces** are demarcated by the exterior envelope of neighboring houses, with each unit contributing to the ultimate form and identity of communal space. Boundaries fluctuate with changes in housing configuration, resulting in outdoor spaces that are consequently larger or smaller and more or less defined.



Aggregate room



Shared surface



Domestic InFlux represents a new model of domesticity. Investigating the intersection of past typologies and modern technologies, it establishes a platform for the creation of a dynamic private residence that can adapt to the changing needs of its user. In a community setting, these houses function to establish aggregate rooms and shared exterior spaces that increase social connectivity while offering optimum privacy and agency over private user space.

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